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GLEANINGS

IN BEE CULTURE

CONTENTS

MARKET QUOTATIONS	694
STRAWS—Dr. Miller	699
BEE-KEEPING AMONG THE ROCKIES ..	701
EDITORIALS.....	703
The Automobile for Out-apiary Work.....	703
Dual Plan of Introducing Queens.....	704
Feeding Unknown Honey to Bees	704
A Cheap and Lasting Smoker Fuel	704
Hive-records	705
Honey-producers' League and Its Work	705
GLEANINGS FROM PACIFIC COAST.....	707
GENERAL CORRESPONDENCE	708
Red-clover Bees	708
Artificial Increase	710
Foul Brood	712
Pertinent Remarks on Shaken Swarms.....	713
Wax-production in Cuba	714
Superseding Our Old Queens.....	715
Prize-winners for this Issue.....	716
The House-apiary in Cuba.....	718
A Good List of "Don'ts".....	720
Shallow Frames Same Depth as Section-holders.....	721
Italianizing as a Cure for Pickled Brood	721
The Hoffman Frame	722
Getting the Bees into the Danzenbaker Super	723
CONVERSATIONS WITH DOOLITTLE	723
HEADS OF GRAIN	725
Entrance-guards for Out-apiaries.....	725
Lewis-Hall Improved Foundation-fastener.....	726
Experience with Alexander Plan of Increase.....	727
Queens Sent by Mail Dying	727
An Uncapping-roller.....	728
Melting Foul-brood Combs in Wax-extractor	729
OUR HOMES	730
SPECIAL NOTICES	743

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GLEANINGS IN **BEE CULTURE** A JOURNAL DEVOTED TO BEES, AND HONEY, AND HOME INTERESTS. ILLUSTRATED SEMI-MONTHLY Published by THE A. ROOT CO. \$1.00 PER YEAR MEDINA, OHIO.

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TO THE 99 PER CENT of honest bee-keepers I would say, it isn't honest to sell half-ripened nectar for honey. To the one per cent of dishonest ones, if there are so many, I would say, you're cheating yourself more than any one else when you extract any thing but the best.

G. M. DOOLITTLE tells of his interesting experiments, page 666, in which the last black bee disappeared 45 days after emerging. But that doesn't mean that the average life was 45 days, *unless* all the bees lived exactly the same length of time. If they died at different ages, the average life must have been less than 45 days.

PROF. COOK, after testing pretty much all the honeys, pronounces sage "pre-eminently superior," page 648. The editor of *Modern Farmer* puts Missouri honey at the top, and the editor of *Rural Bee-keeper* calls Wisconsin honey the best, which is only another way of saying that these three men live respectively in the three regions mentioned.

THAT LABEL, page 644, "White-clover Honey Compound." Is that honest, when only 25 per cent is honey? Would you call butter "Salt Compound" because there's salt in it? [No, it is not honest; but when we consider that, in that same Empire State, the same goods with the same amount of adulteration were formerly put out as "pure honey," we can feel that a big step forward has been taken in the interest of the honey business.—ED.]

BEEN WEARING my pants in my stockings for years to keep bees from crawling up my legs, but this year I'm wearing trouser-guards such as bicyclers use. Ever so much nicer. [Bicycle pant-guards are getting to be quite common among bee-keepers. They

are cheap, and can be had at any bicycle-shop; and they answer almost as well as pants legs tucked into the stockings. They are far more dignified, especially when nice company comes around desiring to see the bees.—ED.]

AT THIS DATE, June 20, white clover is getting in its best licks. Had to get up at 4 o'clock this morning to get in the day's work, so some of these Straws may be a bit damp from the morning dew. [There would be no objections if your Straws are daubed up with propolis finger-marks, or a little honey now and then. They generally are so marked, and in this issue they smell of clover, bee-stings, etc. Editor Hill, of the *American Bee-keeper*, once said he could always tell when a certain editor had been out among the bees by a certain tone that appeared in the editorial writings.—ED.]

FOR FORMING baby nuclei, Mr. Editor, you found they would desert without brood and queen, page 643. I had no brood, and sometimes only a queen-cell, and had no desertions. But I kept them imprisoned for three days. [Possibly the confinement of three days *might* make the bees stick to their homes better; but our rule is to form a nucleus with bees from another yard, and confine them over night and let them out. Without brood or a virgin or a cell they will usually desert, and we generally find it better to have brood, even with a virgin. The average bee-keeper, I am satisfied, will succeed better with the brood in any case. We have had some failures without it.—ED.]

WHITE SAGE and black are mentioned, page 648. But don't Californians say that a large part of what is sold as white-sage honey is gathered from the purple sage? [Purple sage, if I am correct, is very rarely mentioned; but button, black, and white sage are the sources of all the so-called white-sage honey. As I have before pointed out, the name "white sage" refers to the honey more particularly than to the particular species of plant bearing that name from which the honey is supposed to come. The honey from the black and button sage is

just as nice and fine in quality as that from the white; and it is legitimate and proper, inasmuch as the name has become established, to call it white sage. The black and button sage yield the larger portion of the honey. White sage, if I remember correctly, comes on first.—ED.]

"MY FIRST CROP . . . May 10 . . . sold at 7 cts. How does this compare with bee-keeping in the North?" page 641. Wonder how much it will cost me to move down into Texas beside my good friend Scholl. Hold on, though; here's something on next page—something about "really the only country here where honey-yielding flora is productive" being bottoms subject to floods which "happen every few years" to carry off the hives, etc. Sorry, friend Scholl, but I think I'll not come just yet. You see I get quite a bit of honey up here on a nice hill where I don't have to keep my bees on scaffolds.

STOP CRYING about the disappearance of basswood, Mr. Editor, long enough for me to give you a crumb of comfort. "The furniture and box makers use a hundred times as much of this valuable wood as the manufacturers of bee-keepers' supplies," page 668. Well, as soon as cost gets high enough other wood will be used for furniture and boxes, leaving the whole output of basswood for sections, and we can stand a little rise in cost, can't we? [When basswood is so scarce that it will not be available to furniture-makers, it will be too high-priced for sections; or, rather, to put it in another way, the supply available will be so small that the section-maker would not be able to rely on a sufficient supply to take care of a season's business. The fact is, the furniture-makers will use this wood as long as the section men do, I opine; and when *they* can not get any, *we* shall not be able to obtain it.—ED.]

"WITHOUT PROTECTION the bees will desert the super entirely on cool nights, and all work will stop for the time being," page 643. The implication is that we'll get more honey by keeping supers warm. But really will there be very much difference? How much more do you think the bees will *gather* for having their supers blanketed? Suppose the bees are all driven out of the supers by the cold to-night; won't the fielders gather just the same amount to-morrow? That will only make the nurse-bees hustle a little more lively to do the super work next morning that they ought to have done in the night; but if it makes no difference in the gathering won't we get just the same amount in the long run? Or will the nurse-bees strike if they're crowded too hard, obliging a squad of fielders to be detailed for home duty? [Mr. Burt says he does not guess, but knows, that he secures more and better honey with the protection than without. If the bees are out of the super during the night because it is cold, the process of ripening or evaporation is delayed just that much. Possibly you will remem-

ber A. I. Root contended years ago for comb-honey supers inside of the Simplicity hive, or what was virtually a double-walled hive, or a winter-case, the same as Mr. Burt uses. If you will turn back to the early volumes you will notice where you and the senior editor of this journal had an argument on this same point. This, I think, was about the middle of the 80's. It is, no doubt, true that locality has much to do with this matter as well as the season. The very warm nights, for example, that we have been having for the last week would render protecting-cases of no particular advantage. But sometimes we have fairly good honey weather with cool nights and hot days. It is then, if I understand Mr. Burt correctly, that the winter-cases are money-makers.—ED.]

BEEN TRYING a pair of those fingerless gauntlets. I'd rather stand a sting now and then than to wear any thing so warm on a hot day. But I'm glad to have them, after all; for there are times when bees are especially cross, and yet must be handled; and then it's quite a comfort to be saved a lot of stings on the hands and wrists. [You will remember that the gauntlets I sent you were fleece-lined to make them more sting-proof. As I wrote at the time, we can furnish you the same kind of-gauntlet made of lighter material; or, better still, you could make them of mosquito-netting, which will serve to protect the fleshy parts of your wrists almost as well as heavier material. Stings on the backs or palms of the hands, or on the fingers, I do not care so much about; but I do not want any bee up my sleeves, whether it stings or not. Two or three bad stings up the sleeve are apt to make, in my case at least, a lame arm for a day or two; while stings almost anywhere else on my body leave no effect beyond a sharp pain at the moment the sting is received.—ED.]

CONFUSION is feared by friend Scholl if "one brood" is used for "one frame of brood," because he thinks the word "brood" applies to all the brood in a colony. Of course it does; but look here, Louis, did you ever hear the brood of a colony spoken of as "a brood" or "one brood"? So when "a" or any numeral is used, we know that a frame or a number of frames is meant. In this locality the term has been so used for years, and never the least confusion. I don't believe you can make any confusion if you try. Try. [I see no confusion that can possibly come from the term "one brood" or "a brood;" and GLEANINGS will be glad to adopt the term in its columns if its correspondents will use it. If you set the pace in your own Straws I will endeavor to follow suit in the editorial matter. The only possible objection I see is that beginners or new readers might be confused. They are confused as it is, because bee culture has a special nomenclature of its own. When I say we gave a colony a "cell" or a "virgin," what does that mean to a new

reader? On the whole, GLEANINGS is quite willing to adopt the shorter term.—ED.]

MR. EDITOR, you don't get my point, page 639. Is it the odor of the queen herself that plays an important part, or does the queen get her odor from the colony? [Every queen has an odor that we may designate as queen odor, and which the bees in any colony always recognize. But there is another odor which we may, for the want of a better name, designate as colony odor—one that is peculiar to that particular colony. This colony odor is recognized by bees just as the dog is able to recognize the odor or tracks of his master from hundreds of other people who may be in a crowd, or who may have walked over the same place. Our theory is that queen-introduction depends very largely on a queen acquiring the colony odor of the colony to which she is introduced. In saying this I do not mean to imply that queens can not be introduced without acquiring this odor. A queenless and broodless colony will often accept a queen without the formality of introduction. Very often a queen may be introduced to a colony only a few hours queenless, having brood in all stages of growth, without the caging process. While there are exceptions to the general rule, we argue that colony odor is something that the queen should acquire before she is allowed to run loose among the bees without harm. We are practicing the dual plan of introducing, every day. There may be two virgins in the hive at once, one caged and the other out. When the latter begins laying she is taken out and sold, when virgin No. 2 is released and ready to take her flight. When she begins to lay, No. 3 takes the place of No. 2, and so on. This dual plan of introducing would not be possible except that both queens have the colony odor, or have during the time of caging acquired *something* which is *individual* and *peculiar* to that colony to which the queen is introduced.—ED.]

YOU SEEM BOUND to see trouble ahead with regard to sections, Mr. Editor. "It is a big job to box up and prepare for shipment 4000 pieces to make 1000 sections." Is it any bigger job now than when we used them years ago? "I know of no lumber that would be available except hard wood." Well, why wouldn't hard wood make good sections? But if I'm not mistaken my first sections were pine. There's poplar, too, and why not all the soft woods? Look here; you tell us how much it will cost for 1000 four-piece sections before we lose sleep trying to decide whether to go over to bulk or extracted honey. [No, it is no bigger job to pick up and pack 4000 pieces to make 1000 sections than it was several years ago, except that the grading would cost more because there was no grading years ago. Here is the point: In the early 70's beekeepers were quite willing to pay from \$6.00 to \$10.00 a thousand for sections, without a demur, and, besides, the manufacturer had low-priced timber to work with. Thus, both

going and coming it was possible for him to go to the extra labor and still make a good profit. In regard to pine for sections, you are apparently unaware of the fact that this would be almost the most expensive wood that we could use. Poplar is keeping pace with basswood; and when the latter is all gone the former will jump to a prohibitive price. Four-piece sections, dovetailed all round, made of basswood, are now listed at 75 cts. per 1000 more than the one-piece. No more lumber is used; but the difference in the price shows the difference in the amount of labor in making and boxing. Mr. de Beche in this issue suggests that there is a wood in Cuba that would fill the bill for one-piece sections. There are, perhaps, others. The relief would come, *not* from making four-piece sections of some expensive wood, but from adopting some other timber in the tropics for one-piece, and making the sections where the timber grows. But I question whether there is *any* wood *anywhere* that would really take the place of basswood for sections.—ED.]



BEES THAT QUARREL WHEN UNITED.

The Eastern races of bees do not unite well as a rule. So many of the time and labor saving methods which are so necessary in the handling of bees in a wholesale way depend on the ability to unite colonies or parts of colonies readily that it is a serious count against any race of bees that an attempt to unite usually results in a fight to a finish.

REMEDIES FOR BEE-STINGS.

This is the time of year when the novice in bee-keeping is anxiously searching for a reliable antidote for bee-stings. The old hand at the business takes little interest in the subject, so he need not read this, which is intended solely for the benefit of the beginner. It is a serious matter for him, and I hope that my advice may be of some use to him. There are several hundred remedies for bee-stings, and they are nearly all good if properly used. To use them properly the sting should first be removed, and this should be done instantly—not in a moment or two, not in a second or two, but *instantly*. Don't wait for a knife to scrape it out, or for tweezers to pull it out, or for any one else to get it out for you. Train your mind and your muscles to act like lightning, and scrape or rub the sting out with your hand, your arm, on your clothing, the hive, or whatever may be handy—but *get it out at once*. Theoretically, a bee-sting

should not be squeezed. Practically, the time spent in trying to get it out in a way to avoid this is far more harmful. After you have got your sting out thus, you may apply your remedy. Put it on gently. Don't rub it in. This is almost always harmful. Then let it alone. A second application is seldom necessary and often injurious. Applied in this way, with special attention to the first part of the instructions, you should have no difficulty in finding a bee-sting remedy that will exactly fit your particular case.



WEIGHT OF A SECTION OF HONEY.

I see that, in my statement on page 526, I should have been a little more explicit. At the best, it is only a general truth to which there will always be exceptions, and it requires some explanations and possibly modification. The original "pound section," introduced by A. I. Root so many years ago, was $4\frac{1}{2}$ in. square and 2 in. wide, if I am not mistaken. This section, used with separators, and well filled, would hold approximately a pound of honey. Then the width of the section was cut down. I am not sure as to the reason for this, but it was probably in order to make it fit better the hives that came into use later, especially when the change was made from the ten-frame to the eight-frame hive, and from the old double-tier wide frame with tin separators to the single-tier super generally using the thicker wood separators.

At the present time the standard width for sections is $1\frac{1}{2}$ inches. When used with separators this section can seldom be made to hold a pound of honey. Only the exceptionally well-filled ones will come anywhere near it. The average case of 24 sections will weigh about 21 to 22 lbs., varying with the season, the locality, the race of bees, the strength of colony, the kind of super, whether full sheets or only starters of foundation are used, and perhaps a few other conditions. The "plain" section, $1\frac{1}{2}$ inches wide, corresponds very closely to this, being a little heavier, on the average, I believe.

Now, there are some people who have gone a step further in cutting down the width of the section, and are using $1\frac{1}{4}$ or "seven to the foot" regular, or $1\frac{1}{8}$ plain, all of these three being nearly the same in weight when filled. I am one of those who use these narrow sections, and I think them superior in several respects to the wider ones. I will mention only one of these here, which is that there is a much greater uniformity in the weight of individual sections, especially if used in a properly made super. This is more particularly the case when the honey-flow has been rather light or the colony has not had a very strong working force. The reason for this greater uniformity of weight is, in my opinion, that the thickness of the comb more nearly corresponds with what the bees build naturally. They will fill the thicker sections when they are obliged to; but unless they are crowded they will not attach their combs to the bottom as well;

they will not build as close to the wood nor down into the corners as well as they do with the thinner ones.

Now, perhaps, you can see what I had in mind in stating that, the nearer sections approach a pound in average weight, the greater will be the variation in individual weights. There are two ways in which you can increase the weight of a section of honey, namely, by making the section larger, and by having it better filled. Of course, the better filled the sections are, the more nearly they approach uniformity, provided that separators have been used. But if you succeed with a strong colony during a heavy honey-flow, and with all other conditions favorable, in having your wide sections so well filled that they are uniform in weight, they will not compare well in weight with those produced under less favorable conditions, and I am speaking of crops or carloads of honey and not of single cases. While much might be done profitably in some cases to increase the average weight of sections by the adoption of better methods, the only practicable way to get the average producer to have his sections anywhere near a pound in weight would be to increase the size of the section. This might be done in two ways, namely, by making the section higher or wider, or by making it thicker. Either of these methods, but more particularly the latter, will tend to make greater the difference in weight between the heaviest and the lightest sections produced in a season in any given apiary or locality.

As a practical illustration bearing on the subject I will say that I have frequently shown dealers that cases of the wide sections, weighing two or three pounds more than my cases, contained sections that were lighter than any of mine.



SWARMING.

Swarming began early here this season, and in many places there was a regular swarming mania. Every thing wanted to swarm and then swarm again. Beginners were highly elated at the three or four swarms they sometimes got from one, while the older hands tried to keep back swarming until a little later. The swarming was induced by the flow from clover, which with its large amount of pollen seems to have a particularly stimulating effect in this direction. Colonies would swarm with plenty of room in empty extracting-combs.



THE SEASON UP TO DATE.

The flow from clover, while not very great, was followed closely by that from alfalfa, so that the yield so far has been very fair. I took off the first finished case June 14, whereas it was the 22d last year, and the 19th the year before. The first flow from alfalfa never lasts long here, though, as it is cut too soon. At this date, June 17, the hay is nearly all cut and bees are inclined to rob. Sweet clover is now just beginning to bloom, and on that rest our hopes of a crop.

PRODUCING BOTH COMB AND EXTRACTED HONEY FROM THE SAME SUPER.

There seems to be considerable enthusiasm manifested over the plan outlined on p. 594. I thought myself, when I first tried the plan some eight or ten years ago, that I had struck a great thing, but somehow I did not like it as well in practice as I anticipated. The greatest trouble was the difficulty of keeping the sections and separators tight together in the middle of the super. This was partially overcome by putting an extra end-bar in the middle of the extracting-frame, all close-fitting, of course. These small frames, with the division in the middle, were rather troublesome to extract from. Then the honey could not be extracted well except when warm from the hive, or when warmed up, and it was not convenient to pull the comb-supers to pieces to get out these little extracting-frames as soon as they were taken from the bees, extracting, perhaps, only four or five of them at once. Keeping them properly stored when not in use was another complication, as I did not expect to use them during the whole season. Perhaps all of these points might have been worked out satisfactorily, especially by one who was making a specialty of bee-keeping, but at that time I had other business on hand, and I was trying to handle my bees with the least possible amount of labor that would secure good results. This required too much time and complication to suit me under the circumstances, so I adopted other plans for securing the better finishing of the sections at the side of the super, and for the rest I fell back upon my well-tried "combination system" of using shallow extracting-supers in connection with comb-supers. I never published any thing in regard to it, so I am not entitled to any credit if the plan should prove practical on further trial, as no doubt it will for some.

But, if I am not mistaken, I was the first one to make public the idea of using the shallow extracting-super in combination with comb-supers, which I consider more practical. If you will look back over the files of GLEANINGS of twelve or fifteen years ago you will find an article by me on my "combination system," which I also outlined in a paper read at the Chicago convention at about the same time. Later, Mrs. Barber and others hit upon the same plan, independently, perhaps; and my earlier articles having doubtless been forgotten by the editor it was hailed as a new thing, though it is the plan on which my apiaries have been handled for a number of years.

GRASSHOPPERS.

The grasshoppers are beginning to hatch, myriads of them in some places. What the effect will be on the honey crop is an interesting question. Last year in some places they ate the alfalfa-blossoms badly, and so reduced the yield. There will probably be more of them this season, and they may damage us greatly.

SWEET CLOVER.

In spite of the apparent difference in season, estimates of which varied all the way from a week earlier to a month later than usual, both yellow and white sweet clover began to bloom on exactly the same dates as last year, and just fifteen days apart. An increase in the amount of yellow sweet clover would be a fine thing for the bee-keepers here.

GIVING BROOD TO SHAKEN SWARMS.

Dr. Miller wants to know whether the swarms that absconded after being given brood swarmed out the first day or after several days. I believe they all came out again the day after they were hived. Two years ago a large percentage, to many of which brood had been given, swarmed out the next day. Some of them, though, were hived in only one section of my hive, with supers above. This season, all swarms, artificial or natural, were hived in two sections of the brood-chamber, generally with only starters in the frames, and without brood, except in the case of two or three after-swarms. Two or three days thereafter, the lower section was taken away, leaving them in a brood-chamber six inches in depth, having the capacity of about five Langstroth frames. So far as I know, not one of them swarmed out. Of course, supers were given them at the time they were hived.



THIS is the biggest season for white and red clover that we have had for many years; but, unfortunately, the conditions for their rapid growth have not been entirely favorable for the secretion of nectar.

THE TACK-CLAW HIVE-TOOL.

WE have been using a common tack-claw as a hive-tool, as suggested by Mr. Chalon Fowls, of Oberlin, Ohio, for several weeks. We find this tool to be very effective; and, what is more, it is obtainable at any country hardware store for ten cents.

THE AUTOMOBILE FOR OUT-APIARY WORK.

I HAVE been using with much satisfaction our little light Olds runabout in going to our three outyards to look after the work; and while these yards are located on a suburban street-car line that makes hourly trips each way, I find I can save time for myself by using the little vehicle, because I can go and come when I please, without waiting for the

cars. I can work as long as I like, and when my work is done I can start home without any waiting. I often carry along a lot of stuff, such as foundation, supers, and the like. My son, fourteen years old, also goes with me as a sort of errand boy, and brings me this and that in the yard, while I am working over the bees.

THE DUAL PLAN OF INTRODUCING QUEENS.

We have something like 200 Pratt baby nuclei running at full blast. We are about inaugurating the plan of introducing two queens to these babies at a time. We will to-day, say, cage a virgin. Three or four days hence we cage another in the same nucleus. In a few days more, virgin No. 1 will begin laying. Just the minute she deposits eggs she is removed, and virgin No. 2 is released, when she will fly almost immediately. At the same time, virgin No. 3 is caged. The time lost in introducing is thus to a great extent saved, with the result that the virgin, as soon as she is released, is of flying age, and ready to lay very shortly.

The dual plan of introducing has been worked several seasons in our larger nuclei of standard-sized frames; and if it will work with a baby nucleus, a hundred of such babies will be able to do the work of two hundred, and yet secure at the same time egg-laying often enough to keep the baby supplied with a very essential element—*brood*.

As I have said before, I desire to repeat, the honey-producer can well afford to set out a few baby nuclei to supply himself with queens, fresh and ready for strong colonies that have queens too old for the best results, as per E. W. Alexander's article in this issue, or for other cases where queens were suddenly missing, and where it would be a great loss to the colony to go without a laying queen for a matter of four or five days or two weeks before one could be reared, or obtained of the dealer or breeder. And that reminds me that the queen-breeders of the country have been rushed with orders for queens this spring and summer as perhaps they never were before. At one time we were over 500 queen-orders behind; but, thanks to modern methods and the better weather, we shall be caught up now in a few days.

FEEDING UNKNOWN HONEYS TO BEES.

EVERY once in a while we see an item in the bee journals condemning the method now in vogue of feeding sugar syrup to bees requiring winter food or stimulation in spring or summer. GLEANINGS has never recommended the feeding of honey for that purpose unless it has been boiled at least two hours. As a general thing, a honey that can be bought at the price of sugar syrup is of very poor quality. For a winter food, at least, granulated-sugar syrup is far better and cheaper, as a rule.

But what called this more particularly to mind was a letter just received from an extensive bee-keeper in California, whose ad-

dress and name I omit for obvious reasons. He writes:

I bought honey of a commission man in —, to feed to my bees, and have got a bad dose of foul brood in my two apiaries. What is the best method of feeding them, in your judgment?

This man could have well afforded to pay a double or treble price for sugar syrup rather than to take what he has.

I see no wrong in feeding sugar syrup to bees so long as we confine it *strictly to the brood-chamber*. If honey is to be fed at all, boil it two hours. Honey from healthy bees could, of course, be fed back to them; but do not take *any stuff*, the source of which is *unknown* to you.

The quotation I have made above is only one among many others; and if those who advocate feeding only honey could see some of the letters we get they would see the danger of spreading foul brood, as they are liable to do by feeding any thing but sugar syrup. So long as honey will bring a higher price, even a poor article, than sugar syrup, it is certainly folly to feed the more expensive food.

Of course, I am in sympathy with the idea of using cheap honey for feeding to keep it off the market, providing it is cheap enough to compete with sugar. But if it costs more, why run the great risk?

A CHEAP AND LASTING SMOKER-FUEL.

FOR a dry, clean, lasting smoke without sparks, and little or no creosote, old gunny sacks, old burlap, old pieces of carpeting—in fact, any old rags or machine-shop waste—excels any thing else I have ever tried. We have for years used a sort of excelsior that comes from the hand-holes in making hives; and, while this is an excellent fuel, the very nature of the timber of which it is made (pine) causes sooty deposits.

Some years ago Mr. W. L. Coggsball, among other good things he has contributed to the bee-keeping world, described a sort of cartridge fuel that he uses in his smokers; and you will remember he is, perhaps, the most extensive bee-keeper in the United States just now, running more outyards and colonies than any other man in the country. Well, his fuel is nothing more nor less than old gunny sacks rolled on a stick until the roll is about the size of a smoker-barrel. Strings are tied around the roll at regular intervals, when a sharp hatchet or ax cuts the roll into lengths just right for the smoker-barrel. One end of this roll of fuel is dipped into a solution of saltpeter water, and allowed to dry. A quantity of these cartridges, as we may call them, is prepared in advance, and distributed at the various yards. When the apiarist arrives he is not compelled to fuss and fuss and fuss with shavings or rotten wood to get it to ignite. He simply picks up one of these cartridges, touches a match to the dried saltpeter end, that instantly ignites, jams the cartridge into the smoker, and then he is all ready for business for two good solid hours of subduing smoke.

I was surprised yesterday to find how long old rags would burn. Running out of smoker fuel, and every thing being wet at the yard, I went to the automobile-box and picked out some greasy rags and old waste, and lit this—only a small quantity of it—and put it in the smoker. I thought it would last me, perhaps, fifteen minutes, but was surprised to find it gave me a nice good clean smoke for an hour and a half, without any coaxing or getting up steam, ready to tackle a cross colony. Yesterday, June 26, was a very cool raw day, and I had to use, as a matter of course, much more smoke than usual.

We are just getting our boys into the way of using this greasy waste from our machine-shop and factory buildings. This we have ordinarily burned under the boilers, as the insurance companies do not allow us to keep it around, for fear of spontaneous combustion; but this very fact makes it readily ignitable, and for our purpose it is the cheapest fuel that can possibly be obtained.

The reader of these lines can probably obtain all the greasy waste he can use by applying at any large machine-shop where quantities of this material are thrown away. Something not quite so good, but a good deal the same character, can be obtained at any printing-office, for large quantities of waste must necessarily be used at such a place. By "waste" I mean the stringy material of cotton that is used for wiping printers' rollers, greasy machinery, or greasy fingers. Any of the places I have named will be glad to get rid of it, as they know its retention on the premises is a constant source of danger from fire.

Mr. Bingham recommends dry sound maple wood. I have used this considerably, but, all things considered, I very much prefer excelsior or greasy waste.

It was Mr. J. E. Crane, who, some years ago, spoke about propolized quilts or cloths which had become too poor for covering frames or supers, for smoker fuel. The burning propolis makes a terribly strong smoke. It will make bees curl up in utter helplessness about as quick as any thing I have tried. It is a little too subduing, and ordinarily I should prefer greasy rags, such as we can obtain at a machine-shop.

If you provide such a place with a metal can, and request the men to throw their waste into the can, outdoors, you will soon have accumulation enough to run you a whole season.

HIVE-RECORDS.

FOR many years we have used little slate tablets, writing the record with slate-pencils sometimes, but generally with a red or lead pencil. But the slates would get displaced or lost, and the records would wash out sometimes. This year we began numbering our hives, and started out on the Dr. Miller plan of keeping a book for each yard, giving each hive a number and a full page in the book. This plan has some advantages to recommend it; but, my, oh my! with our

diversity of help one man would forget and carry the book away; and when another man would go to the yard he was utterly helpless. We have abandoned the book system now entirely, and are using what I believe to be better than any thing else—a large shippers' tag made of heavy manilla paper, with a hole in one end. This is soaked in linseed oil, and is then ready for any record with pen or pencil. One tag is secured to the cover by means of a large tack through the hole, and the record of that colony or of its queens is recorded in short long-hand. Then at the end of the season they can be filed away, for each tag has a number corresponding with a number on the hive which was used. If we wish to consult an old record of some particular colony, the file containing these cards can easily be found, and the entire history obtained. It virtually amounts to a card index, with the advantage that the card itself is on the hive during the working season, and then is available in the office for reference after the working season. It sometimes happens that a customer complains that a certain queen was unsatisfactory, or that she was a hybrid. If this complaint is made along in the fall or winter we can easily look up the history of the case. The handwriting will show who put up the queen.

THE NEW HONEY-PRODUCERS' LEAGUE AND ITS WORK.

THIS new organization, although it has been in existence for less than three months, is beginning to do some valuable work. It is now preparing a statement for the general public, to go in comb-honey shipping-cases, giving the facts about comb honey, refuting absolutely the comb-honey lie. In proof of its falsity the authority of the National Bee-keepers' Association, the reward of \$1000 offered by a reputable firm, and the statement of government bulletins, are cited. The full text of this will be published, possibly, in our next issue. I understand it is the desire of the League to get the manufacturers of the country to insert these leaflets, free of charge, in all the shipping-cases they send out. The A. I. Root Company proposes to do it, and I feel sure that the other manufacturers will do so for the sake of the good it will do to their own business.

Manager York has been useful in getting various items concerning comb honey in the daily press. He has prepared a very readable article, which is published in one of the largest and most influential journals in Chicago—the *Daily News*. Here it is:

In March, 1905, there was formed in Chicago, and incorporated the following month in Illinois, an organization called the Honey-producers' League. One of its objects is "to publish facts about honey, and counteract misrepresentations of the same." It is hoped through the efforts of this League, with the co-operation of the leading newspapers and magazines of our country, to turn the tide in favor of the use of honey as a daily food, and also, as before stated, to endeavor to correct the popular delusion that comb honey is a man-made article.

Some twenty-five years ago a noted "professor," in

order to work off a superabundance of "fun," as he termed it, published the statement that honey-comb was manufactured, then filled with glucose, and sealed over, all with appropriate machinery. It seems that the press of those days was waiting to welcome such a yarn, and forthwith scattered the news throughout the length and breadth of the land. It was so well done, and seemed to be so eagerly swallowed by the public, that its unfortunate repetition has been going on during all the years. The very best of metropolitan dailies, as well as the most conservative monthlies of largest circulations, have been deceived by the comb-honey misrepresentations, and have unwittingly aided in its further dissemination.

Almost for the last twenty years there has been a standing offer of \$1000, made by a reputable firm, for just one pound of the so-called manufactured comb honey. But if there is any such article in existence, strange to say no one has as yet proved his claim to the reward offered. The fact is, comb honey has never been made except by bees, as otherwise it is a mechanical impossibility.

It is true that the liquid honey—honey taken from the original honey-comb by centrifugal force—is sometimes adulterated with glucose and offered as a pure article; but the various State food laws are fast getting after such adulteration, and either compelling its true labeling or driving it from the open market. At least, since the passage and enforcement of such laws in various States adulterated liquid honey is disappearing from the field of food products.

To sum up, then, any comb honey found upon the market in small wooden frames can be relied upon as being absolutely pure bees' honey. Of course, the flavor may not always be the same, as each nectar-yielding variety of flower produces honey of its own peculiar aroma, just as the pure maple sugar or syrup tastes of the maple and not of the beech or oak.

It may be said, further, that the prospects for a generous crop of honey to be harvested throughout the country the next two or three months seem to be most excellent at this time. So in all probability there will be plenty of this most healthful sweet for every inhabitant in the land, and each should see to it that he gets his share.

GEORGE W. YORK,

Manager of the Honey-producers' League, Chicago.

I wish to suggest that our subscribers help along this good work by getting this statement republished in their own local papers. If you have any political or any other kind of "pull" with some influential paper or journal, go to the editor of that publication and explain why it will be doing *you* a good turn.

THE HONEY-CROP REPORT.

IN most localities the season for honey is either past or well on. From present indications the crop will be a light one in most localities, with a few exceptions, where the flow of honey is unusually good and the crop heavy.

Southern California, from reports we get, will have only from a third to half a crop. It has been a season of unusual cold—rather an exception for a wet year when the honey crop in Southern California is almost a sure thing.

In Texas the conditions are but little if any better. The catclaw and guajilla both bloomed very heavily in the spring; but on account of many rains and cool weather they yielded very little honey. The same is largely true of mesquite and horsemint. The bees would have a few days of sunshine, would work strong in storing surplus, then rain would set in and stop proceedings. It is not too late for a good crop in Texas; but the indications are for a light yield throughout the State.

Colorado and the irrigated regions are less dependent on peculiar weather conditions

that affect the East and South. There will probably be a light to fair crop from alfalfa. See page 702. □

The conditions throughout the clover belt have been peculiar. Almost every one who writes, reports an immense acreage of clover, but too much rain and cold weather, and some chilled brood. In some cases the hives have been filled with honey, but that is about all. In others a fair surplus has been secured; but just as the bees get fairly to work, and the conditions seem just right, it either rains or turns cold—generally both.

Strangely enough, Missouri has been having a sort of drouth; and while that State was last year almost the banner one for honey, it is mourning with the rest for the nectar that did not come.

Another State where there has been a drouth, at least in some sections, is Vermont, and the conditions there are about the same as in Missouri.

Most of the bee-keepers in New York report a backward and unfavorable season—no lack of clover, but the same old story—too wet and too cold for the bees to work. This is largely true of Wisconsin and Minnesota.

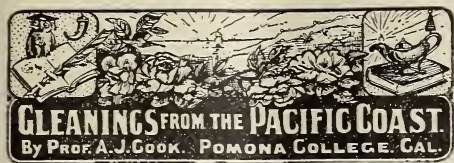
If there is any State that seems to offer encouragement for honey it is Michigan. Nearly all of those who have reported from that State speak favorably or at least not unfavorably of the season. Possibly the proximity to large bodies of water around the Peninsular State has had much to do with tempering the atmosphere.

In parts of Ohio the season started out magnificently. At our outyards I never saw bees work better for four or five days, when they could do any thing at all; but just as soon as we began to give them room it rained, turned cold, and we have had cold north winds ever since. It has begun to warm up again, and if it continues the fine beds of clover still in bloom will fill our hives to repletion. Ohio will rank well with Michigan.

The conditions throughout the clover belt may be summarized somewhat as follows:

There is an unusual amount of white, red, and peavine clover, and a heavy growth of sweet clover, which may materialize for the bees in late summer. I think there never was a year when there was so much of white and red clover reported as this season. Certainly I have never seen so much during the short trips I have made throughout the country on the automobile. While, apparently, there will not be a heavy crop, this presages well for the next season, and possibly for several years to come. After clover has attained such a strong growth it would be a very severe drouth that would affect it seriously next year.

We shall be glad to have our subscribers continue to send in postal-card reports giving the latest from their locality. The value and accuracy of these general crop reports in these columns will depend upon the number of them received. Before you forget it fill out a postal *now* and address it to GLEANINGS, Medina, O.



THE BEE'S POCKET HANDKERCHIEF.

In the previous issue of GLEANINGS I discussed the stomach mouth. We saw how interesting was the action of this little organ, and how effective in removing pollen from honey. To-day I am to consider the nose and pocket handkerchief of the bee. I hope, Mr. Editor, this will not trouble you, in that you will think you ought to put a new subject in the A B C, as I am sure one would look in vain for either nose or pocket handkerchief in your admirable work which is really almost cyclopedic. While I presume the eyes of the bee aid them in their quest in field in forest, yet I have reason to believe that the eyes are not very sensitive. Without doubt, smell is much more to the purpose in guiding the bees to the nectar. It is probable, also, that the drones are quickly guided to the queen as she flies forth to mate, by this same sense. And where is the nose? There can be no doubt that it lies in the antennæ. We might say, then, that the bee has two noses, and so does not differ greatly from higher animals, as even we have two olfactory openings which are absolutely separate. The mechanism of these olfactory organs in bees is easily studied by the use of the microscope. We find, upon close examination, that there are many little pits in the antennæ of insects; and in those insects where the sense of smell is very necessary, and thus supposedly very acute, as in the case of bees and moths, there may be a thousand of these little pits. These pits are lined with a very delicate membrane, which is evidently the scent membrane. At the bottom of these pits are little pegs, which, of course, increase the spread of membrane. Thus each of these little pits, tubes, or wells closely resembles a common form of glass bottle which must be familiar to all our readers.

In such bottles the bottom is pushed up so that there is a hole or concavity at the bottom on the outside. The drones and male moths have many more of these scent-cells than do the others. This accounts for the fact that a female moth just from the cocoon often attracts scores of males into a room, although the window may be up hardly at all. That these antennæ are scent-organs is clearly proved by the fact that the blow-fly, when these are cut off, can not find the meat. Many like experiments leave no room for doubt. Once proved that the antennæ are scent-organs, there can no longer be doubt that the numerous pores, or pits, each with its pegs at the bottom, are really the organs of this special sense. Thus, as we now understand where the nose or noses of the bee are located, it is next in order to

examine how this organ is kept clean, or where the pocket handkerchief is, that the bee must use to keep its scent organs in perfect order. We can easily see how the bee, diving into the flower-tube, would get its antennæ smeared with pollen, and so how its sense of smell would become dulled. Surely no animal would stand more in need of a pocket handkerchief.

THE ANTENNÆ-CLEANER.

The antennæ-cleaner on the front leg of nearly all hymenopterous insects (wasps, bees, etc.) is a strangely interesting apparatus. It is really in part a half-circle or half-cylinder, situated in the basal tarsus, and lined with very delicate hairs. This groove is just large enough to hold the antennæ. Shutting over this is the tibial spur, which is hinged, and, on the side next the groove, consists of very delicate membrane, softer than the finest chamois skin.

Let us now study the cleaning process. Those curious to see just how it is done have only to put a bee on the window, dust its antennæ with chalk or flour, and watch it with a good hand lens. The soiled antenna is pushed into the groove, pressed down by the spur, and drawn out. Of course, all pollen and dust are removed, and we may say the nose is wiped. But we must remember that this pollen is bread to the bees, and must not be wasted. If we examine the tarsi of the middle legs (by "*tarsi*" we mean the five last joints or pieces of the legs) we shall find, on the inside, brushes of hairs. After the antennæ-cleaner is used, it in turn is drawn between these brushes of the middle legs, which, in turn, receive the pollen. These are then wiped off on the corbicula, or pollen-basket, of the hind legs. So the pollen goes from antennæ to all the legs successively till it reaches the pollen-basket of the hind legs, where, with other pollen combed from hairs of the body, it is packed and carried to the hive.

The mud-wasps have a similar apparatus, as do most insects of the order *Hymenoptera*. In the case of mud-wasps, as they are delving in the dust for mud their antennæ become soiled with dust—a useless material. They remove it as did the bee the pollen; but it is no longer of use, and their only desire is to clean the antennæ-cleaner. Those of us who remember our sticky fingers in the candy days will know just how the wasp performs. She opens her mouth, passes the antennæ-cleaner between her lips, wipes off the dust, and then spits it forth, for it is dirt.

FUNGI AND BACTERIA.

California is no exception among the States of the country in being very much interested practically in two very serious plant diseases. As both of these diseases affect the bee-keeper, surely our readers will be glad to know something of them. I refer to the asparagus-rust fungus and to pear-blight. The former disease has destroyed very valuable property east as well as in California in the last few years. While the pear-blight

has ruined thousands of dollars' worth of orchards in the San Joaquin Valley; and as it has now pushed up into the Sacramento Valley, the end is not yet. Our readers have already heard how the bees are instrumental in spreading pear-blight. Yet it is to be said that, even in this case, the bees are more to be desired than condemned; for, while the bees are absolutely necessary for proper pollination, even of the pear, yet other nectar-loving insects are sufficient in number to scatter the pear-blight, and would do it effectually, even though there were no honey-bees at all.

The asparagus-rust came from Europe, where it is far less serious than in America. It devastated in the East first about 1896. It spread so rapidly that in 1900 it had invaded California, where it has worked fearful havoc. Asparagus grows remarkably in California, and who of us does not know of the excellence of canned asparagus? So this question of asparagus-rust is one of great economic importance. Like the wheat-rust, the asparagus-rust has three forms—the early-cluster cup stage; the æcidium stage, which, in the case of the wheat-rust, works on barberry, here works on the asparagus. This is inconspicuous. The summer stage, uredo, carries red spores, and so colors the asparagus, as it does the wheat, a red color. These red spores are carried easily and to great distances, and so scatter the disease, even carrying it across our country in a few years. As this does the principal scattering, it is, perhaps, the most serious stage, though the mycelial threads in all three stages penetrate the tissues and kill the plants. The third stage, teleuto, is black, and comes in late autumn. This is hardy, and carries the plant through the winter. The spores also enter the plant from the ground. Professor Smith, of our State University, has published a valuable bulletin, No. 165, in which he gives the results of his researches. He finds that the red spores can develop only in moisture, and so a very dry atmosphere is safe against this plague. This explains why plants underneath trees are free from the fell disease. He shows that, in case of asparagus, the black spores, where the asparagus is cut and the ground well tilled, do not get a hold. If, then, all other asparagus-plants are kept away, the disease would be less in evidence. The practical point, then, is to allow no asparagus-plants to grow except those in cultivation. Professor Smith also finds that sulphur is a specific against this rust. Here, then, we have a case where scientific research saves to us one of our most important industries, and one of our most succulent and appetizing food-plants. The bee-keeper will be interested to know that bees gather this rust in lieu of pollen, as the spores furnish them their proteid food.



COLD VERSUS HONEY.

We have been having very cool weather. With the exception of a very few days,

when the honey came rushing in, the days have been so cool that the bees were loath to fly and the flowers too chilled to secrete much nectar. It is now warming up, and we hope that June will show up better.



RED-CLOVER BEES.

A Word of Defense from H. Freudenstein,
Publisher of the "Neue Bienen-Zeitung,"
Marburg, Germany.

Translated from the *Bienen-Vater*, Vienna, Austria,
by Frank Benton, U. S. Department of Agriculture,
Washington, D. C.

How times change! A few years ago I was a welcome guest in the bee papers. When I sent an article it was accepted and paid for. But since I have been publishing the *Neue Bienenzeitung* not a good word is to be found about me in the papers; on the other hand, attacks in nearly every number, particularly on the subject of the sugar swindle and the swindle with long-tongued bees. If I attempt to defend myself against these, my articles are not accepted. In the beginning this aroused me greatly. But I have become quite used to it. What those papers desired they did not succeed in, as daily experience shows. The *Neue Bienenzeitung* is succeeding well, notwithstanding, or perhaps even in consequence of, these attacks; and, for that matter, why does one, if he has a good conscience, need to be at all stirred up over such a thing, even though he may have been attacked on one side or the other as a humbug? He has simply to keep still and wait until the sky clears, and then only those who have raised the false accusation will have to bear the blame of it. A thing which in itself is good can not be easily suppressed by such means, but, on the other hand, such attacks are a fire which purifies and which also blazes up and draws attention to the subject.

Two articles directed against me have appeared in the Vienna *Bienen-Vater*. But the *Bienen-Vater* appears to differ most remarkably from other papers in that it has, without my having suggested the plan at all, requested me to answer these articles. I shall do this by answering the question: What is there really to this subject of long-tongued bees?

If we take a look at our various races of domestic animals we find that they have nothing at all—a member, a hair, a feather, which does not show the greatest differences.

And out in the garden among the flowers and other plants the same variations are seen. These differences of the races and varieties did not always exist; with wild animals and reptiles we do not find them to the same degree; they have been produced by man through selection in breeding.

Through selection in breeding, man has produced such animals as he needs—light fast horses for the saddle, heavy ones for drawing freight-wagons; cows which far exceed in yield of milk their ancestors, sheep with the finest wool for the manufacture of cloth, and sheep which give a less quantity of wool but a correspondingly greater yield of meat for the butcher, etc.

By the side of these breeds for practical purposes there have been produced through selection by man races whose usefulness is very small, but which, by reason of their abnormality or beauty, etc., find fanciers; such are the so-called fancy breeds—ponies, bantams, dwarfed dogs, peafowls, peafowl pigeons, etc. Such extremes as man can breed, as are shown by our domestic bees, nature does not produce. Milch cows with such large heavy udders would, in a wild state, soon fall a prey to bears and wolves; such a breed would, therefore, not preserve itself. And how could such dwarfed dogs as we possess secure food in the wild condition?

What I wish to show by all this is that, through selection in the breeding of animals, man can change very materially every member, and thus suitably mold the animals to his purposes and to his aims in breeding. Thus Darwin said: "State a quality which you desire, and I will breed it in the animal in question. That certain limits exist in this connection is to be understood."

For centuries bees have been domestic animals, but up to recent times there has been followed by man no definite system of selection in their breeding. Man has taken the bee always just as it came from the hand of nature. Indeed, in recent times he has even hindered nature in bringing about, by means of natural selection, the adaptation of the race of bees to their changed conditions. I should like, first of all, to show this here. In our forests the soft-wood trees yielding honey (willow, alders, lindens) are being cut away, and the heath plains are being planted to trees. In the fields, in the place of honey-producing crimson, white, and esparcet clover, there is continually appearing the red clover from which bees get honey only under especially favorable circumstances, thus from year to year the harvest becomes less.

But among bees there are undoubtedly strains which, under these unfavorable conditions, are better honey-producers than others. Were nature to rule undisturbed, then all of those strains would be destroyed, which from any cause whatever were not able, under these unfavorable conditions, to collect the necessary surplus, and only those would remain which could get together for themselves the needed stores. Thus nature

would plainly and surely practice selection in breeding. But along comes the bee-keeper and feeds the colonies which are too light in the autumn, and thus prevents nature from adapting through natural selection our bees to the changed conditions of pasturage. Thus from being a useful race which brings in something, our bees must be changed more and more into a fancy race which must be supported by the bee-keeper.

In a similarly thoughtless manner straw-hive bee-keeping has been followed for centuries. In the autumn all hives which had not swarmed, and were thus the heaviest in honey, were sulphured. In this way our heath bee, this swarmer and waster of honey, the worst of all races of bees, has been produced.

These facts, which are wholly unassailable, have pushed forward in my mind the question whether and how this matter might be helped.

I have already mentioned that, with us, in place of the rich honey-producing crimson, white, and esparcet clovers, red clover is continually appearing, in which the nectar remains so deep down that the bees are able only under especially favorable conditions to suck up a portion of the rich treasures. There are only two ways possible—either we must raise red clover with shorter corolla-tubes, or bees with longer tongues. We can, however, follow both ways.

When we consider what plant-breeders have done—how they have been able to change materially all the parts of a plant, we are no longer, even for a moment, in doubt as to their ability to breed with certainty a red clover which shall meet our requirements. But these would help us less than would the long-tongued bees—first, because such a clover would be dearer than the common clover; second, it would be just as difficult, or even more difficult, to continue to cultivate this clover in its purity than it would a long-tongued race of bees; third, bee-keepers, who usually do not possess much land, would be dependent upon the good will of the farmers; and, fourth, long-tongued bees would not only be able to visit the red clover but also many other plants with deep-located nectaries.

Therefore the second way would surely be the better. We are not at all prevented, however, from doing both ways, and in order to prove that I do not wish to hinder, but, on the other hand, to further the matter, I herewith offer a prize of one thousand marks for the breeding of a variety of red clover which will be visited by honey-bees. The exact conditions of this offer I will make known in my *Neue Bienenzeitung*.

If, then, I held the breeding of long-tongued bees as a thing particularly worthy of being undertaken, then I must, above all things, seek for bees which nature had endowed with longer tongues than others, for it has always been clear to me that I could not succeed in getting long-tongued bees by merely letting the bees sip up honey through a wire cloth and thus oblige them to stretch

out their tongues, as has been attributed to me by various apiarian journals.

But some years ago the news spread through the German bee journals that in America they had bred long-tongued bees which worked on red clover. Such a queen was said to cost one thousand marks, and Mr. Freyhoff, my greatest opposer, expressed the view that, for those who desired to possess such queens, there remained nothing further than to dig right deeply down into their pockets. Well, the tide changed, and long-tongued bees were scoffed at and termed an American humbug.

The people who wrote this had never seen such bees, nor could they form any opinion of a man who, on the basis of his actual experience, could express such unfavorable views. I could, therefore, set this down as merely efforts on their part to wag their tongues wisely. Why should it not be possible to breed long-tongued bees? Breeders of animals have done much greater things than this. I resolved, therefore, to investigate the matter thoroughly, hence procured the addresses of American breeders and ordered queens. The test of these could not be conducted at one place only. It is well known that plants which are very productive of honey in one place, as, for example, linden and locust trees, at other places do not produce honey at all, or only a very poor quality. Thus, here in Marburg the celebrated linden honey is of a miserable quality. With the red clover such a condition would have to be taken into account, particularly since, in the case of this plant, the nectar is very deep down in the corolla, and even under the most favorable condition only a part of it can be obtained. In this case, therefore, the variations of soil and climate, which are of such importance in the secretion of nectar, must be taken into account particularly, hence the test of the American bees could not be confined to one place alone. It needed to be carried out in as many places as possible. Therefore I offered queens to other bee-keepers; and as I am only a poor little schoolmaster I could not give away the queens, but was obliged to put a price upon them.

ARTIFICIAL INCREASE.

Prevention of Swarming With and Without Increase and Production of Comb Honey.
An Excellent Review of the Subject.

BY L. STACHELHAUSEN.

The prevention of natural swarms is a problem for every bee-keeper who has a number of out-apiaries, especially if comb honey is produced. Lately different plans for this purpose were published, and claimed as new systems of management.

According to localities, these managements must be different, depending on the time when bees would swarm naturally, and when the main honey-flow commences. In my locality, in most years at least, the

swarming-time is four or more weeks before the main honey-flow, consequently the prevention of swarming is quite another operation from the preparing of a colony for the best condition for storing honey in sections. In other localities these two operations can be combined, because the swarming-time is just before or at beginning of the main honey-flow.

For prevention of swarming we have different ways. The first one is to use large hives (double deckers), in which the brood-nest can be expanded in every direction, and the queen is never crowded. In many localities swarming can be prevented entirely in this way. In other localities it is delayed for some weeks at least. If this is not sufficient, another way is to take from the colony some brood, preferably capped brood, or some bees. With this material taken from several colonies we must form new swarms, if we have no other place to use it profitably.

The taking away of brood-combs, and replacing them with frames of foundation or empty combs, is simple enough, and every bee-keeper knows how to do it.

The critical point is the way in which we take some worker-bees from a colony. I know of three different ways.

1. We shake or brush the bees from some or all the brood-combs (shook swarms).

2. We draw some bees from a colony (1) by setting a new hive on the stand of this colony and removing colony 1 to a new stand. We will call such swarms "flight swarms" till somebody finds a better name.

3. We draw some bees from a colony by the following operation: A hive-body with some brood-combs is placed on top of a colony over a queen-excluder. In a few hours these brood-combs will be covered with mostly young bees; the hive-body is removed, and so some young bees are drawn from the colony (drawn swarms).

All these three ways have advantages and disadvantages. Further, we have some variations whether we give to the new swarm more or less brood-combs: further, the swarm can get a young or the old queen from the hive from which the bees are taken, or no queen at all, and so may be forced to raise a queen from the brood given to it. According to these differences the swarm as well as the parent colony must be managed differently. It is plain that many combinations of these different operations are possible, but no part of it will be new.

In respect to "drawn swarms" I will remark that sometimes it is desirable to form a colony with capped brood only for the purpose of having it hopelessly queenless. This can easily be performed by this operation, if the brood-combs remain over the excluder for nine or ten days. I have used this plan for many years for preparing colonies for cell-building. As soon as the cells are started, the hive-body with the brood-combs is set back on the excluder.

By the "shook-swarm" plan it is not necessary that we take the bees from a single col-

ony. We can shake them from combs out of different colonies or we can gather some bees hanging out in front of some strong colonies, or in any other way (gathered swarms).

To prevent swarming without increase we have different ways again. One of the most interesting is the following: Hunt out the queen and place her with one or two brood-combs in a new hive. Fill this hive with frames of foundation or with empty combs, and set it on the old stand. On top of it place a queen-excluder and over it all the other brood-combs. This plan is a sure preventive of swarming. In some localities it may be necessary to go through the operation a second time; but for comb-honey production it is not practicable. I have not read an explanation of this fact as yet, and will give one here: If a queen-excluder is used, and we have brood on both sides of it we divide the colony practically in two to a certain degree. That the queenless part of this division will raise a queen is proof enough that practically such a division takes place. In the case we have in consideration we have, in fact, made a "flight swarm" and have set the parent colony on top of it over the excluder.

Some other plans to prevent swarming without increase are based on the principle of making artificial swarms as soon as queen-cells are started, and to unite again when the danger of swarming is over. We can divide one colony into two, and afterward unite them again; but we can just as well make the swarm by the help of more colonies than one, and unite any two colonies afterward for this purpose.

This dividing and uniting afterward of a colony can be done in different ways. The principle is, that one part of the colony with most or all of the brood-combs is weakened so much in bees that the queen-cells are destroyed; now both colonies can be united again. By all these different combinations that part of the colony with the most brood is removed to a new stand. Sometimes it may happen that, in this part of the colony, the eggs are removed from the cells, and a part or all the open brood starved to death. This is caused by the fact that the bees are not able to prepare larval food without water. The proper remedy is, to give to such colonies, when they are formed, a comb filled with water. This is sufficient till some of the young bees fly out and return to this colony. This was known long ago; nevertheless, this point is generally not mentioned if this manipulation is described. The reason is, that this manipulation is generally done during a honey-flow, and then enough thin honey is in the hive, and this watering is not necessary.

Quite another problem it was for me to have my colonies in proper condition for storing honey in the sections at the right time. I had no trouble in preventing swarming by the use of large hives; and if this was not sufficient in some years I made artificial colonies with plenty of bees, a full

set of brood-combs, and a fertile queen, so they were working colonies right at once, the same as any old colony. This had to be done before the main honey-flow commenced; but now with the honey-flow the difficulty arose. In these hives with large brood-chambers the colonies were not in good condition for section work. I never thought of using smaller hives, because I knew the disadvantages of them for development in spring, especially in my locality. I had made the observation that strong swarms, hived just at the beginning of the honey-flow, could easily be induced to commence the work in the sections at once. Such swarms had given me the most honey; in fact, I never could get much comb honey in sections from any colony except from such swarms. Sometimes I united two or more natural swarms and got a fair crop of comb honey from them.

The only difficulty with these swarms was that they got weaker every day during the first three weeks by losing some field bees, and because no young bees were added to the working force. At the same time an increasing number of young bees were necessary for the swarm to nourish the increasing brood. It was plain to me the swarm should get some young bees occasionally to make up the loss of worker bees during the first three weeks. It was easy enough to make the swarm artificially by any one of the ways described in this article, but how add some bees to the swarm? Heddon's plan to prevent after-swarms has given me a hint how it can be done, and I believe I was the first one who recommended this jumping-over of the parent colony several times till all the bees are drawn to the swarm. But even then I can not claim any thing new, because the operation is nothing but Heddon's plan extended for a longer period of time, and to the finish of this colony. This plan of comb-honey production was called the "shook-swarm system." This is somewhat misleading, because it makes no difference at all how the swarm is formed. We can just as well use a natural swarm; we can use two colonies if we want a very strong swarm, or we can make the swarm in any other way. In fact, I have used different ways to form these swarms, and had very good reason to prefer the shaking. By jumping we can draw the bees from the parent colony, which had given the bees for the swarm or from any other colony, if more convenient. This would need a little different manipulation, but otherwise would make no difference. The principle is to make an artificial swarm and afterward strengthen it about once every week by adding more bees. There are some other ways to strengthen this colony with bees, possibly some of them even better. Colonies manipulated in this way will not swarm. The swarming-time in some localities is just at the beginning of the main honey-flow. In this case the two purposes named above are attained by one and the same operation.

Converse, Texas.

[I have been quite interested in reading your excellent review of the different methods for the prevention of swarming, with and without increase. The plan of jumping one hive over another to catch the flying bees in another hive, *a la* Sibbald, is not new by any means, except in detail. Langstroth himself, in the early editions of his book, describes the main principle of this plan; and the senior editor of this journal tried it after Langstroth's instructions about thirty years ago. You do not state, friend S., whether you had any difficulty about the bees finding their old entrances, as was mentioned editorially in our last issue; neither do you mention the labor of jumping one hive over another. Taking it all it all I am just now inclined toward the brushed or shaken swarm plan as originally announced by you.—ED.]

FOUL BROOD.

How to Secure a Surplus of Honey from a Colony of Bees Having this Dread Disease.

BY HARRY W. CRAVEN.

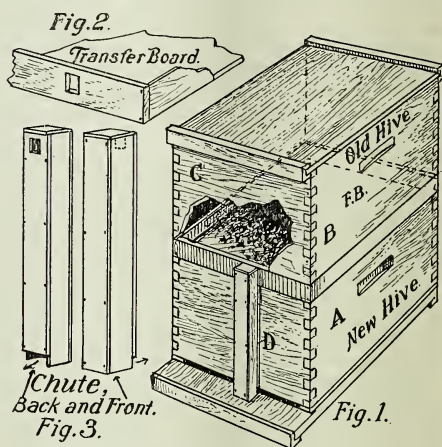
A great many bee-keepers all over the country, when first they discover foul brood in their apiaries, hold up their hands in horror because of the dread disease which makes such havoc with the busy little workers. Some of our largest apiculturists, who have vague ideas of foul brood as meaning utter loss of profits and sometimes their livelihood for one year, when they discern the dread disease in their yards commence to cure the disease at any cost when there is absolutely no need of it.

While working last summer on one of the large bee-ranches of Colorado, where foul brood is almost synonymous with healthy brood, I found a very effective and practical method by which the bee-keepers of that section made large profits from their foul-broody colonies. I will try to tell as best I can how it is done.

Let us start in the spring when the bees commence to fly out, say about the middle of April. At that time the examination of colonies is under way for feeding and weeding out the foul-brood hives to be treated later. Now comes the honey-flow. The hives of foul brood, when first discovered, have been marked "F. B." and date of the discovery affixed. Before starting with an operation let us first of all provide ourselves with the following apparatus: First we need a nice clean hive with frames of starters; then we obtain what is known as a transfer-board. It is nothing more than a shallow wooden tray, which will fit either an eight-frame or a ten-frame hive. Fig. 2 shows it, and it is very easily made with $\frac{3}{4}$ strips for the sides, and $\frac{3}{4}$ stuff for the floor. After the transfer-board we get pieces of lath and make a chute, the length of the chute depending on the distance of the hole in the transfer-board when put on the new hive,

and a snug fit to the alighting-board. Fig. 3 shows the chute and how it is made. Please take careful notice of it, for it is a most important factor in the operation, and, last of all, we shall have to have a queen-cage, for the queen must be confined for 48 hours.

Now we have come to the operating-table. Let us begin by first finding the true foul brood—no guesswork about it as to whether it is chilled, black, or pickle brood. When we are sure we have the real thing we go and bring the new hive with starters, also the other necessities that go with the hive, and place them within convenient reach. Then we commence in earnest. We search out the queen of the foul-brood colony and cage her, putting the cage and the queen on the bottom-bar of the middle frame of the new hive. After we have done this we



HIVE PREPARED FOR FOUL BROOD.

remove the old hive and put the new hive in its place. We now put the transfer-board on and make sure that it is bee-tight. Then we take the foul-brood hive and put it on the transfer-board, and again see to it that Mistress Bee does not have an ingress or an egress to the top hive. Next we take up the operation of shaking the bees from the foul-brood combs before the new hive with the queen caged in it. We, however, leave a small per cent of bees in the upper hive so that the brood will all be hatched and well taken care of.

As the bees in the foul-brood hive hatch out they enter the chute through the hole in the transfer-board, and come out of the chute from the inside, or with their heads turned toward the entrance of the lower hive. Coming back with new honey they enter the regular entrance, and go to swell the force of workers in the field.

We are all ready for putting on the chute now. We put on the chute so that the hole in it and the hole in the transfer-board will come together, and care must be taken that they do, or else the bees that will be hatched

out from the foul-brood combs will perish, thereby causing a loss of bees to the force below. When we first put on the chute it is always best to close it up for a few hours or until the bees have quieted down, for sometimes the bees that are left in the upper hive call their comrades, and we have to do the shaking all over again.

Now as to the snug fit to the alighting-board of the chute. If we did not fit it close, I have found sometimes that the bees, when they came out, have found their way back up the chute and have gone to work and raised another queen, thereby nullifying all our work as to getting the bees into one hive and strong enough to gather a surplus of honey during the summer. We can make this close fit by making the opening at the lower end of the chute on an angle so that one straight edge will come tight to the alighting-board, while the other straight edge will have a $\frac{3}{4}$ beeway. Fig. 1 will show what is meant. The last thing to be done with the whole operation is removing the foul-brood hive after the brood has hatched out. You must be careful in removing or you will find to your sorrow that you will have all your troubles over again next season, and perhaps more of it.

In closing let me impress on your mind to have the upper hive bee-tight, for it is from there we get all our trouble. We cage the queen so that she may not abscond with the swarm, which has been known to happen more than once. It gives the bees time to build down the comb, and by the time the queen is at liberty she has plenty of room to deposit her eggs, and is perfectly content to stay.

This is the plan as I saw it, and practiced last summer, and is being practiced by the large bee-men of Colorado with good results. While it can not be said that it is infallible in curing or absolutely abolishing foul brood, it can be said that, in about 75 per cent of cases, it does cure, and is far more effective when it comes to raising surplus honey from foul-brood colonies. I can also say that it would be far more effective in curing foul brood if there were not so much carelessness in operation.

Another plan practiced by one of the largest comb-honey producers of Colorado for curbing foul-brood and working the bees for surplus is as follows: Take from two to five colonies infected with foul brood, shake them out, first caging the queen, before new hives on their old stands. Now take the old hives and stack them on top of another, as many as you please. Inside of 21 days shake out the two, three, four, or say five hives before a clean hive with a new queen caged in the hive, and you have an increase. This plan does not appeal to me, for it does not give greatest possible strength in bees for the gathering of surplus during the honey-flow. Evanston, Ill.

[This I consider to be a very valuable contribution to our bee-lore, and I respectfully recommend it to those of our readers who

are afflicted with foul brood, and yet desire to secure a crop just the same.]

The plan is somewhat similar to the one advocated by M. M. Baldridge some seven or eight years ago; but instead of using a transfer-board and a chute he recommended an ordinary escape-board through which the young bees, as fast as they hatched, passed into the lower hive. But the chute and transfer-board, as above described, has an advantage over the Baldridge plan in that the bees do not immediately desert the brood. Unless it is warm weather the old bees as well the young ones will sooner or later (probably "sooner") go through the bee-escape into the lower hive. But the Colorado plan, with transfer-board and chute, provides that the brood shall not be deserted until the bees are of a flying age. By that time the brood will probably have all hatched out, and the result will be there will be no chilled brood along with the regular foul brood.

I am not sure but the supply-manufacturers ought to supply these outfits. If there should be a call for them they undoubtedly would. They should be well made, and exact, as our correspondent points out.

One thing more should be mentioned, and that is, the side of the chute through which the bees escape should be *toward the hive*; that is to say, the bees, when ready to fly, escape into the new hive below; and when they desire to pass outward they fly from the entrance toward which they will naturally return, joining their fellows in the lower hive.

In the third paragraph our correspondent conveys the impression that the transfer-board and chute is not applied to the infected hive *until* the honey-flow. It would seem to me to be better to commence operations *before* that time, so that the entire force would be available and ready at the time of putting the supers on the lower hive, which would now have combs drawn out below, and the queen at work.—Ed.]

PERTINENT REMARKS ON SHAKEN SWARMS.

Fifteen Minutes a Colony all the Time Needed.
A new Scheme of Shaking.

BY E. S. MILLER.

In your explanation of "shook" swarming, page 528, it seems to me you miss some of the points essential to success, and emphasize others not so important. Here is a better way.

If your colony is very strong, first tack a piece of Tinker zinc over the entrance. Provide yourself with a heavy cloth or canvas—a grain-sack is all right—and a hive filled with empty combs or frames with starters. Remove the super and throw the canvas over the top of the hive to keep the bees in. Next, roll back the cloth from one side, and smoke down as you remove each frame of brood, and replace it with an empty

comb, shaking and brushing the bees *back into the hive*. Don't let the bees boil over the top of the hive, or you may lose the queen. Don't shake them out into the grass in front of the hive—that's unnecessary; but keep the queen in the hive where she belongs. Be sure that the bees fill themselves before you remove the brood, and be sure to remove *all* the brood from the old hive and *all* the bees from the brood. This is important.

After the exchange of frames is made, replace the super, and then, with the brood, build up the nuclei which you have previously started, giving each nucleus only as much brood as the bees can care for. Time of operation, fifteen minutes. Results, the swarming fever is effectually broken up for the season. No second shaking, pattering around, no after-examination to see if they are going to swarm. The job is done. The old colony is strong; it has all the bees and a laying queen. The new colony can be built up to any desired strength without danger of swarming if plenty of room is given. After the nucleus is built up to ten frames, put on a queen-excluder and add another ten frames of brood. If you have not any nuclei started, then use Alexander's plan, page 425, which, by the way, is worthy of more consideration than it has received.

Will the bees abscond? No, not if the conditions within the hive are all right. It is these conditions, not the manner of getting them into the hive, that determine whether or not the bees will be contented. Remember these things: The bees must be filled with honey before the brood is removed. Bees don't like to see daylight through the top of the hive. Make it tight, Dr. Miller notwithstanding, page 523. Bees don't like to be tampered with after being once settled in their new quarters. Leave them alone for at least three days, or leave the zinc over the entrance.

In respect to Alexander's idea, page 425, I will say that I believe it will prove exceedingly valuable. I am testing it this summer with 125 colonies. I would, however, modify Mr. Alexander's method in one particular; and that is, instead of putting the new hive below, I would remove frames as in shaking, and put the new hive with brood above for the following reasons:

1. It requires less work; 2. It obviates the necessity for hunting the queen, which is no easy or pleasant task with a hive full of bees. I have found that sometimes, even with strong colonies, violent robbing takes place before the bees have had time to adjust themselves to their new surroundings.

Valparaiso, Ind.

[There are several modifications of the shake-swarm plan. I believe the one you recommend is feasible and practicable. I have seen Coggs and his men during extracting time shake the combs right in the hives. I had supposed the bees would pile upon them in the bottom of the hive to winter over with shaking, but I noticed they did not.—Ed.]

WAX-PRODUCTION IN CUBA.

Frames Spaced Far Apart so as to Give More Wax with the Cappings.

BY LESLIE BURR.

Wax is just as important a product to the Cuban bee-keeper as honey; and with the idea in view of producing just as much wax as possible I will take you through a season of Cuban bee-keeping.

The principal honey-flowers begin about November 1, and last till along in February. Through this flow I practice just as wide spacing as the strength of the colony will permit. The strongest can be spaced seven combs to a ten-frame super. With this wide spacing the bees will build comb clear up over the top-bar.

In uncapping, remember you are after wax, so have the lower edge of the knife dull to cut the wax from the top-bar with, and cut the comb down even with the top and bottom bars. I may also add that strong frames are wanted, and that, after you run across one frame with metal spacers under half an inch of wax, you do not want any more. In March, April, and May is the spring flow. The bees begin to breed, and, if nothing is done, swarming begins.

Now put on the queen-excluders; cut out half or two-thirds of the combs above, and replace the empty frames. At this time of the year the bees are anxious to rear drones; and as they have none, about all of the comb built will be drone; and as they are expecting the queen to lay in it, it is left open. Now make the rounds every week or ten days, and knock out the drone comb and replace the frames in the strong colonies where there will be danger of swarming. Keep taking combs of brood from the brood-nest and put them above the excluder, replacing them with starters. Sometimes the bees will be kind enough to build full frames of worker combs. In such cases let them stay and keep putting the old combs above to hatch.

When the spring flow is over you have probably half a set of combs to the colony, so when the fall flow comes in August and September the bees have something to do besides swarming.

In having your combs built at this time of year, always use full sheets of foundation in the brood-nest, as you are now wanting nothing but worker comb below.

For the super, use starters. It makes little difference what the combs are above; but take care during the early part of the honey season to put the drone combs by themselves over colonies with excluders, taking the excluder off later when there is no danger of the queen going above, as a colony will plug a brood-nest far worse where there is an excluder between them and the super.

Now, when you add about starter and full sheets of foundation, when it is necessary to use only a full sheet, do so; but when you use start-

ers you are doing so to *save* foundation. Use half an inch—don't waste your foundation by putting in two inches.

Casanova, Cuba.

SUPERSEDING OUR OLD QUEENS.

Do Not Let the Bees Decide as to the Time for Doing This; a Novel Plan for Indicating the Age of Queen.

BY E. W. ALEXANDER.

To supersede our queens when two years old, or to leave it for the bees to attend to, is a question of far more importance than many realize, and one upon which I very decidedly differ with some of our best bee-keepers. Last fall we had 107 queens in our apiary that were $2\frac{1}{2}$ years old. Therefore for many years we have superseded all our queens at 2 years of age; but as a part of these queens were some we had bought, and were of an extra good strain, their hives being well filled with honey, and as some writers on the subject had claimed that the bees knew better than we when to supersede their queens, I thought I would test this matter thoroughly on a large scale, even if it cost me the 107 colonies to do so.

THE RESULT OF THE EXPERIMENT.

We put our bees in the cellar about the middle of November. These colonies, with their queens $2\frac{1}{2}$ years old, were put in with the other colonies here and there all through the lot, and had exactly the same chance as those with younger queens. When we took them from the cellar about the middle of April we found only eleven that had superseded their 'queens; and it had been done so late in the fall that 6 were drone-layers, and the other 5 were about as weak in bees as those with the old queen; and of the remaining 96, 3 were fairly good, 26 were very weak in bees, and the other 67 were dead.

In looking over our bees about Sept. 1 we noticed that these old queens had all stopped laying, and had but little brood compared with the young queens. This fact, undoubtedly, had much to do with the weak condition of the few that survived the winter.

Of the other 603 colonies in the same cellar, that had queens 6 months old and $1\frac{1}{2}$ years old, only 7 were lost.

Now, my friends, can any of you say that it does not pay to keep track of the age of your queens, and attend to superseding them yourself? I am sure it has always paid me well, heretofore, to do so, and I do hope that this costly experiment that I have just made will save many of you from a like experience. As I have written before, it is so easy to get the best of young queens now that have been reared from extra good honey-gathering strains that we have no excuse whatever for keeping old inferior queens in our apiary; and I want to ask those of you who advocate letting their bees do their own superseding if it would not have been much better for me to supersede those 107 queens last summer, at an expense of about \$65,

than to lose at least \$400 worth of bees in leaving it for the bees themselves to attend to.

KEEPING TRACK OF THE AGE AND QUALITY OF THE QUEENS.

In the August issue of the *Review*, 1904, is published an article I wrote on keeping track of the age and quality of our queens, which is well worth more than a year's subscription to some of you who take that paper; and for the benefit of those who take *GLEANINGS* only I will copy a part of said article:

"As we run all our bees now for extracted honey I will not take up any of the thousand and one different ways of producing comb honey. That is a trade of itself; neither will I enter into the many different ways of rearing choice queens, except what I have said in the above; but there is one thing which I wish to call your attention to, and that is this: Not one bee-keeper in 50 can tell me, as we walk through his apiary, the age and quality of every queen in the yard. This is one of the most essential things to know at all times if you expect to make a success of the business; and I have often wondered why some one has not given us a good practical way of knowing this before now. I used a book for this purpose, but often found it quite inconvenient to look over 200 or 300 pages to find what I wanted to know at a glance; so I adopted the following, which is very accurate, and tells me at once all I wish to know about the age and quality of every queen I have.

"TIN TAGS FOR SHOWING AGE AND QUALITY OF QUEENS.

"Something like 30 years ago I cut out a lot of pieces of tin—some round, some half round, and some square, about one inch in diameter; and whenever I find a young queen commencing to lay I put one of these tags on the front of the hive on the left-hand corner, about two inches from the bottom. It is put on with a carpet-tack through the center, and is easily taken off with my knife; and it follows that queen to every hive she is ever put into. If she proves to be a choice queen the tag is put a few inches higher up on the corner of the hive; and if very choice, still higher. If she is inferior in any way it is put over toward the middle of the hive; if very poor it is put clear over to the other side. I use only one shape of tag each summer, with all the queens of that summer's rearing. The next summer I use another shape, perhaps round or square; then when I walk through the apiary I can tell at a glance the age and quality of every queen in the yard; and then when I have surplus queens on hand I can go right to the hives that contain my poorest queens and supersede them at once without having to open any hive unnecessarily. You see I can tell at any time, as I see by the fronts of the hives just how many queens I have of a certain age, also their quality. If you will adopt this way of keeping track of your queens you will soon weed out the poor ones,

and find it a great advantage to you to do so."

There, friends, I almost beg of you to take my advice in this matter, and adopt some simple method whereby you can tell at a glance the age and quality of every queen in your apiary. It is not only a source of much satisfaction to know the real merit of all your queens when working among them, but I assure you it is also, from a dollar point of view, one of much importance.

In regard to the proper time to supersede, I must differ with those who recommend superseding in the fall. My principal reason for doing so is this: If the queen to be superseded (as is generally the case) is old, and beginning to fail in keeping her hive well filled with brood, then you stand a big chance of having a weak colony the following spring unless you give them a young queen before August 1. In this section even our young queens lay but little after Sept. 1, and certainly we should have a good prolific queen in every hive at least one month before the breeding season closes. But if you are superseding good queens that have kept their hives well filled with brood to the end of the season (simply to get a better strain of bees) *then* you can supersede your queens almost any time during the fall; otherwise I should very decidedly prefer superseding all my queens early in the season.

Now, my friends, think this matter over well; and in doing so remember that your next year's surplus depends to a great extent on the quality of the queens you have in your hives this coming fall. The man who is careless in this matter will have many disappointments that he might otherwise avoid with but little trouble and expense.

Now a few words to those who ask me many questions by letter. If you will send your questions to GLEANINGS or the *Review* I will try to answer them through those papers. During the last month I have answered one question in 63 different letters, and I certainly have not time to write the same thing over and over so often.

Delanson, N. Y.

[Mr. A. E. Manum, a well-known contributor to these columns some ten years ago, and who, at the time at least, was operating a series of outyards of some six hundred colonies, I think, stated most emphatically that he could not afford to keep a queen after she was two years old. Some disagreed with him at the time; but I think a majority of the practical honey-producers supported his contention.

The experiment recorded by our correspondent with 107 colonies is very interesting and valuable. What has cost him several hundred dollars is placed before our readers at the mere mere cost of reading, plus one twenty-fourth of a year's subscription. And, by the way, there are hundreds of good things in all the bee-papers. I think it was Mr. W. L. Coggs, another bee-keeper whose colonies run up into the hundreds, said that he could not afford, busy as

he was, to fail to go over carefully all the bee-journals, for he says he is constantly getting new ideas that mean to him dollars and dollars. This article alone, if carefully read, will be worth, perhaps, hundreds of dollars to other bee-keepers.

Very lately in these columns one or two writers have urged that, in their own practice, they supersede once every year, claiming that a queen six months or a year old would give results that a queen two years old would not; that any thing over two years old was never to be considered except as a breeder.—ED.]

PRIZE-WINNERS FOR THIS ISSUE.

Professional Men in the Ranks of Bee-keepers.

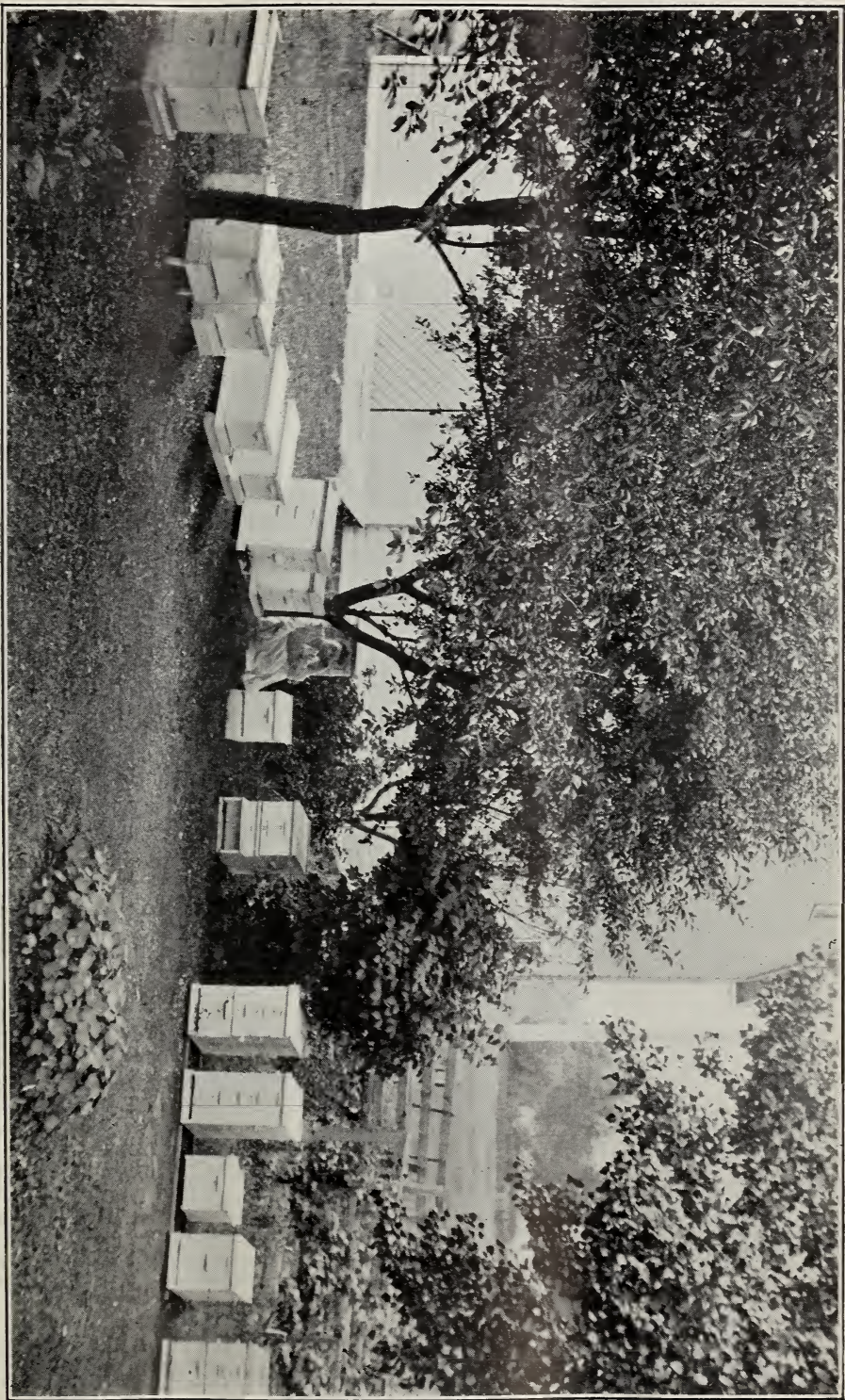
BY E. R. ROOT.

Mr. Charles G. Macklin, of Morrison, Ill., was the winner of the second prize for the view of the bee-yard here shown, in the late photo contest. He is one of the very numerous examples of professional men who have taken up bee-keeping as a side line—not alone for the money there may be in it, but primarily for the pleasure and recreation after business hours. He is an insurance agent by occupation, but has been keeping bees for three years, and now has an apiary of something like 100 colonies—a corner section of which appears in the accompanying photo—the winner of the second prize. It appears to be the back yard of an ordinary town or city lot. The grass is kept down with a lawn-mower, and ornamental shrubbery as well as fruit-trees are conveniently located for shade to the hives.

At the time of submitting the photo Mr. Macklin gave us no particulars; but in the absence of any statement I assume that "a better half" is the sharer in the recreation and pleasure afforded by the bees. Perhaps it is she who sits in the delightful shade of the tree where she can watch the busy workers bringing in what they suppose to be their own stores of mellifluous sweetness, but which in reality they are to share with her.

Where the rest of the hundred hives are located may be guessed. They may be in the two long rows diverging at right angles.

The addition of professional men to our ranks is and should be welcomed by the bread-and-butter bee-keeper, the one who keeps bees solely for the living he can get out of them, for it is these men of affairs, learning, and finance, with their political pull and influence who are able to get for us needed legislation to protect our interests. It is these men who are able to go before the big newspapers and magazines and secure denials of comb-honey lies. It is these men who add dignity and power to our conventions, and who enliven our bee-lore, not so much by their practical experience as by their enthusiasm that gives a new tone and life to the ordinary humdrum of bread-and-butter getting.



APIARY OF CHAS. G. MACKLIN, MORRISON, ILLS., WINNER OF SECOND PRIZE IN PHOTO CONTEST.

THE SECOND PRIZE, SWARM OF BEES.

The winner of the second prize for a swarm of bees is Mr. W. C. Naftel, of Naftel, Ala. I understand from the committee that the feature which gave this second place, or perhaps any place at all, was the Manum swarming-basket. The bees, it appears, have been dumped inside of the basket, the cover flipped in place, when the remaining bees that were not captured inside, but which may have taken wing, later clustered on the outside.

The Manum swarming arrangement does not require that *all* the bees should be secured inside of the wire-cloth cage. A half or two-thirds will be sufficient. If the cover is folded over in place, and the basket be poised in midair on its tripod, the remaining bees in the air will soon find the main cluster and cling to the outside. When all are in place the tripod is lifted, the two legs

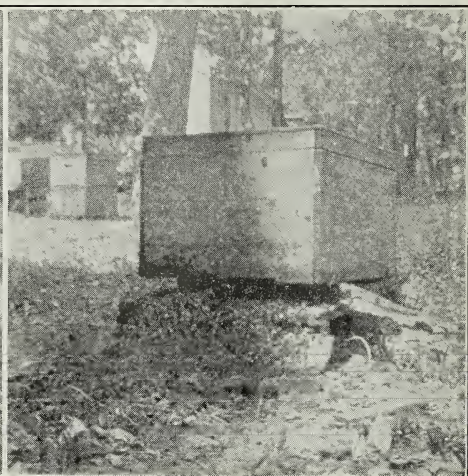
THE HOUSE-APIARY IN CUBA.

Some of its Advantages and Disadvantages in that Climate.

BY F. H. DE BECHE.

I send you herewith four pictures. They are not intended to compete for the GLEANINGS prize pictures, but I am sure you will be interested in looking at them.

The largest picture shows my home yard at Taco-Taco. It is located at the top of a small hill on the edge of the village, and you can see the roofs of its houses and the mountains in the background. The village of Taco-Taco is built in the lowest center part of that valley, on both sides of the Western Railway tracks which cross it. This general view of the apiary was taken about two and a half years ago. Some sticks



SWARM—BY W. C. NAFTEL, NAFTEL, ALA.

are pulled up against the main pole, the whole then balanced for easy carrying. On arriving at the hive the basket is slowly inverted by grasping the ring in the bottom of the cone of wire cloth. A quick jerk dislodges the bees on the ground in front of the hive, or better, perhaps, directly into the hive.

The view at the right shows how this particular swarm was finally dumped in front. The hive was pried up, and a board leaned up against the bottom-board. At the time the photo was taken the bees were in the act of crawling into the hive.

When a swarm is just dumped, the entrance should be as large as possible. If practicable, the hive-body should be tilted off from the bottom-board to give a large amount of ventilation, and should be left up until the bees cool off and begin house-keeping.

of "guasimas" trees were then planted scattered amongst the hives to provide for shade later on. You can form an idea of the growth of this tree by looking at the two pictures of the house-apiary built on the same ground of this home yard. The smaller picture of this house-apiary was taken when it was just finished. You will notice that there is no tree planted on its side, and I planted at that time a small stick of "guasima" that was lying on the ground. It looks in this picture as if the boys thought that what I wanted to take was their picture instead of the house-apiary. The other picture of this house-apiary was taken a year later, and you will notice that the tree is rather taller than the house itself.

You may be interested in knowing something about this house-apiary, which perhaps will seem to you a strange thing here in this hot climate. It was built for experiment



DE BECHE'S HOME YARD AT TACO-TACO, CUBA.

purposes. It contains fifty hives—two rows on each side. To work the upper row you have to stand on the hives of the lower row, as can be easily seen from its construction shown in the picture. Our honey crop here takes place during the winter months, when most nights are very cold and day time hot. These very cold nights compel the bees to cluster in the lower stories, in some cases abandoning the upper stories entirely for a while, and the queens refrain from laying to their full capacity, not only on this account,

but also from being overcrowded by the bees which store the honey in the lower stories. This is a very important matter to overcome, as our honey season lasts over six months, and if you do not look carefully into this matter you run the risk of your colonies becoming very weak in the midst of the honey season. The artificial heat you can create at night in the house-apiary overcomes the trouble of the queens not laying to their full capacity; and, although at times the colonies in the house-apiary had seven



DE BECHE'S CUBAN HOUSE-APIARY IN USE.

and eight frames of brood when those outside had only two and three, I must say that, taking all points into consideration, the two first years' experience with this house-apiary has not proved it to be a success. Comparing the result for the whole season of those fifty colonies in the house-apiary with a like number of similar ones located outside in the open air, those in the house-apiary, in spite of having had at times so much more brood, did not yield more honey than those located outside. The total yield of honey from both lots was about even. It remains against the house-apiary, the unhandiness in working bees and hives there; and the extreme heat in the house during the day time, in spite of same being provided with ventilation, makes it so uncomfortable to work in that the boys dislike to work in it, and take turns in working in the "oven," as the boys call the house-apiary. Taking, besides, into consideration the extra cost, I consider this house-apiary plan impracticable and unprofitable.

I send you also a picture showing a cart loading honey. I suppose you have seen so many pictures of honey being loaded that it will be of no interest to you; but this picture will show you the good nature of our oxen, and especially of this one particular one, which does not mind one of the boys lying on his back. This cart is somewhat different from the kind of carts generally used here. Its body can be tumbled down; and, while in this position, the back part of it touches the ground, which makes it easy



LOADING HONEY ON AN OX-CART IN CUBA.

for our heavy casks of honey to be rolled upon it.

While talking about our guasima-trees, I remember Mr. James Hilbert, Vidal Cruz, and some others say that it would be just the thing for section lumber. If the bass-wood supply runs out, as you fear, and it is a fact that guasima can take its place, there is a big field of supply here.

Havana, Cuba, June 8.



DE BECHE'S HOUSE-APIARY JUST COMPLETED.

A GOOD LIST OF "DON'TS."

Requeen in the Fall; Winter Cellar Bees on Good White Honey.

BY R. G. CAREY.

I have had a great many failures which might have been prevented if I could have known where I was in the wrong. I will give a few suggestions and cautions for the benefit of the beginners.

Don't dig the snow away from the hives unless it is a very warm day, for the least little jar will set the bees to crawling, and break the cluster, and they will die.

If you winter bees in the cellar, don't go down every day or two and hold a light under the hives to see the bees, for it makes them crawl about, and many will not get back in the cluster. Those that do will load up with honey, bringing on dysentery.

If you give the bees a midwinter flight, don't set the hives within three rods of each other, for they have been in the cellar all together, and all have the same smell, so that, when they fly, some hives will get lots of bees and some will have a mere handful.

Don't tinker with your bees in the spring unless they are flying freely, for you will chill a lot of brood if you take the cover off and stir them up the least bit.

Don't put your sections on until the bees whiten the top edges of the combs, and stick little bits of wax on the under side of the cover, for if you do you are liable to chill the brood and set them back. They won't work in the sections until the right time comes any way.

I have had good success in introducing young queens about the time fall apples are picked. These young queens will fill the hives with eggs where an old queen would hardly lay at all. These eggs are the bees that are in the hive April 15.

I manage to have a frame of nice white clover honey in the fall for every colony. Then about three or four weeks before winter sets in I go to my hives and take out the lightest frame that has no brood and place that frame of clover honey right in the center of the brood-nest. I find that the bees will move the honey out of the center of the frame; and as fast as they do, the queen will fill those cells with eggs. If you winter in the cellar, that frame of honey is about as much as they will consume during the confinement, and they will come out in better condition in the spring than they would if they had late fall honey to winter on. In the spring, when the maples are in bloom, I look the bees over. If they want more honey I give them some of the heaviest frames I took out in the fall, and in that way I don't have much if any thing left but empty combs.

Spencerport, N. Y., March 23.

SHALLOW FRAMES SAME DEPTH AS SECTION-HOLDERS.

Putting Brood-frames in the Super to Induce Bees to Work in the Sections.

BY E. P. CHURCHILL.

About fifteen years ago I had a shallow-frame idea, the same length as the L., and $4\frac{1}{2}$ inside, with top and bottom bar $\frac{3}{8}$ thick by $\frac{7}{8}$ wide, and wide (section) frame the same thickness of required box width, so as to take four sections. On each corner of the brood-frame I glued and nailed wedges $\frac{7}{8}$ long with about half its length left as a bearing. They were $\frac{3}{8}$ thick so as to space as near a natural bee-space as could be handily, and it all proved better than I expected. Why, I often have a whole set of combs (9 frames), all brood, save some pollen—yes, not a bit of honey in the nest. I use reversible iron on section-frames and quite a lot of brood-frames. Nothing is handier than to have four sections reversible at one turn, or something which can be exchanged from inside to outside of case quickly. There are slatted separators nailed to one side.

Now you see I can put a frame of brood up among the sections, which hurries the bees into them (I know). I always find bees in the sections sooner on shallow frames, and get most honey there; and as all are the same length I change cases to regular L. hives. Wedges being up and down they work perfectly; and one advantage is, open ends afford a beeway, and but little room for gum; and as they run with square ends out there is no chance to catch, and they are superior, even on L. frames, second one in place of end of whole spacer.

Of course, I have scraping to do on even so small a bearing (and we have got to scrape or make a bungling job), to say nothing of inducing bees to stay down by frames being pressed too far apart by propolis.

It seems to me a big mistake, those inch-wide top-bars, as it rather prevents egg-laying, as the $\frac{1}{2}$ thickness is natural. I have noticed where I made closest spacing I get section work sooner and heavier.

With my shallow frames I have to use excluders. I use only one set of brood-frames to a colony; and when they get too full I use some in other hives among sections; and to help weaker ones, if so needed, and thus keep swarming down by replacing empty combs or foundation-frames I haven't a thing that hits the nail more fairly than the above arrangement.

My hives (all chaff) have regulating entrances from 0 to $\frac{3}{8} \times 6$ inches, or I can remove it and give 1×14 . The small one is all connected, and can be trusted against wind and storm and robber bees. Hives ought to have regulating and yet permanent slide-entrance regulators as much as a house—why not?

I see in GLEANINGS suggestions for shorter spacers. Don't hold to that as an improvement. Why, there would be still more sway and variation, especially without thorough scraping and hard and sure pressing together.

All need a pry to move followers—two pieces of half-inch or more, a foot or more long, fastened in a square from one to three inches wide, one five with ends, ends wedged an inch or so. That is one of my most useful tools. We need a hand pry for followers to hold much.

My bees are all raised from the bottom-board, and never had such warm packing as last winter, and never were so still and so indifferent to noise.

Hallowell, Me.

[Our friend Churchill is one of the oldest users of shallow frames, but very few find it practicable to use frames quite so shallow.

Regarding top-bars, they can be narrower in the case of shallow than deep frames. —Ed.]

ITALIANIZING AS A CURE FOR PICKLED BROOD.

An Interesting Experiment.

BY G. A. BOSTWICK.

After reading what Mr. C. F. Bender and A. J. Halter say in Dec. 1st GLEANINGS I beg to say nearly all they have said I have verified in my own experience.

Two years ago I purchased ten colonies of bees in boxes of all shapes and sizes. Previous to this all my bees were healthy. In transferring my new bees to movable-frame hives there were leaks from broken combs, and drippings here and there. About three weeks after, I discovered sunken cappings, and careful inspection failed to show a

healthy colony in the whole yard nor even in my neighbor's yard. I sent you a sample, and you said you were unable to tell definitely whether it was black or pickled brood—certain cases of each resembling each other.

After doctoring, fussing, and writing for a year, I ran across a man of wide experience in troubles of this sort. He advised me to get rid of the black blood in my apiary. In the mean time I had the disease examined by a prominent bacteriologist, who unhesitatingly pronounced it pickled brood. He seemed to take a deep interest in my case, and insisted that I introduce pure Italian queens throughout. Now for the result. As fast as colonies became thoroughly Italianized, the disease disappeared.

After all were Italianized and healthy I had a stray swarm come to an empty hive on some old combs from pickled-brood hives. The next spring they had the disease. Of course, it might have come from diseased honey in their honey-sacs; but the fact they were on infected combs seems quite convincing. I Italianized them, and they were cured. I am not saying Italians are free from pickled brood; but I do think they are much more immune to brood disease. I have had two seasons to look for the return of the disease, and have been unable to detect a single cell, the same combs previously being full of it.

Verbank Village, N. Y., Dec. 7.

THE HOFFMAN FRAME.

Producing Both Comb and Extracted Honey in One Super.

BY M. W. SHEPHERD.

We notice on page 593 an article from Mr. Hoffman in defense of the frame bearing his name. We notice he says, "as for the practical bee-keeper, the loose swinging is out of date." We would say that, with the small bee-keeper, and in a locality where there is but little propolis, the self-spacing frame might give satisfaction; but where large apiaries are kept, or where propolis is abundant, the self-spacing is not what the bee-keeper wants. The Hoffman frame is not a good frame to use in the extractor; no uncapper can handle as many of them in a day as he can of the unspaced kind, and I have never yet found the person who could clear a super of Hoffman frames as quickly as he could the loose or unspaced. Where propolis is plentiful the Hoffman frame soon refuses to go up close to its neighbor. You must scrape the propolis off soon or you can not get the follower in the hive, and that is usually the condition in which I find Hoffman frames. J. A. Green puts the matter true and square when he says the Hoffman frame is not the frame for average bee-keepers, for they will forget to crowd the frames together. Mr. Hoffman says that is easily answered by giving such

average bee-keepers the advice to go back to the old box hive. We wonder if that is an indirect admission that, if the Hoffman frames are *not* crowded together tightly, and so held with springs, they are no better than the box hive. We are inclined to think it is about the truth, anyhow.

Years ago, when living in the North, and using the two-story chaff hive, we tried alternating the wide frames with extracting-combs, thus producing both comb and extracted honey in the same super. We found the extracting-frames worked all right, but we had trouble by having the comb honey built out and over the upper edges of the tin separators, so we gave the plan up. Mr. Townsend, by adopting the idea to be used in the shallow supers, may make a success of it; but it gives a lot of small combs to be cared for at the end of the season, which may be counted as an objection by some. They might possibly be sold as chunk honey, and at better prices than he could get for the honey extracted. However, we hope the plan will be thoroughly tested the present season. Mr. Townsend says, page 594, to overcome this tendency of the bees to go above, probably the majority are bait sections. We ask *why* the majority are bait combs. In our practice we never use more than one or two bait sections to the super—always put them as near the middle of the super as possible, and have never had trouble in getting the bees to work at once in the supers; yet we are aware that locality has much to do with it, and what will work here would not do in Michigan or other northern States.

The honey crop throughout the South is short this season—in fact, it is a question whether bees will get enough to winter on; if they don't, will it pay to feed?

Interlachen, Fla.

[You say, "The self-spacing frame is not what the bee-keeper wants" "where large apiaries are kept." The facts are, there are hundreds of "large apiaries" where nothing else will be used, and there are several very extensive bee-keepers who are using Hoffman frames who run for extracted honey, and who have from 1000 to 1500 colonies. For instance, Mr. F. H. de Beche, in this issue, would not have any thing else, and propolis is very abundant in Cuba. Indeed, the conditions are much the same there as in Florida. As I have repeatedly stated before, this question of frame choice is largely one of individual preferences based on methods of management in different localities. For instance, there are some counties in York State where bee-keeping is carried on very extensively, where the self-spacing frames are used very largely. In Wisconsin there are other counties where nothing but the unspaced frame is used.

With regard to springs, we do not recommend them to go with Hoffman frames, and have never used them, and we do not know of anyone who does, nor have we ever seen

Our correspondent's horizon would be con-

siderably broadened, perhaps, on this self-spacing question if he were to take a trip among bee-keepers that would aggregate anywhere from 2000 to 5000 miles, taking in all kinds of localities in all parts of the country. I have made several such trips, and am not prepared to recommend the Hoffman frame to everybody, nor the closed-end, nor even the unspaced Langstroth. —Ed.]

GETTING THE BEES INTO THE DANZENBAKER SUPER.

An Excellent Plan for Curing Bees that Sulk.

BY JAY SMITH.

I was much interested in reading the article by Mr. Townsend, page 594, in regard to using extracting-combs in the outside frames in the supers. I have been experimenting along similar lines, and have solved the problem of getting the bees into the super, to my own satisfaction at least.

In the spring, as soon as apples are in bloom, I give a second hive with drawn combs under the first. Later, or just before the raspberries bloom, I shift the bottom hive to the top, thereby giving the queen plenty of room to lay. I leave things alone till the clover flow is on in earnest, or till the bees have been gathering for about a week. Then I select ten frames containing the most capped brood, and place them in the bottom hive. The super with full sheets of foundation is now put on, a queen-excluder on top of this; and the other hive-body, containing some brood, pollen, and honey is set on top of all. In about two days the foundation is whitened and partly drawn. Then the top hive is removed to a weaker colony after first shaking or brushing off all the bees. In using this method I never had *one single colony* loaf or sulk when adding the super or when taking off the top hive-body. I never had any pollen in the sections, and every one was as white as snow. I do not have half the swarms I used to have when using but one hive. The objection I have to using a super full of extracting-combs is that I can not get the bottom hive completely filled with brood as I can by using two and then removing the outside combs and putting in frames of brood from the top hive.

Now, to dispose of the partly filled left-over sections I place them in the outside rows, when the entire super is finished at the same time. But I dislike left-over sections on general principles, and had decided to nail on a top-bar and use the two outside frames in super for extracted honey; but I see Mr. Townsend has "beat me to it."

I use these bait combs for bait in another way. I take them to the grocer whose customers complain that "that white stuff was never made by bees." After getting the customer started on this dirty honey and after he knows where it comes from, I can then get him to work on A No. 1 white hon-

ey; whereas if I had tried to start him in on white honey he would have sulked.

I use the Danzenbaker hive, and with this management it gives the best of results.

Vincennes, Ind.

[Our correspondent is working along the right line. The method of management he describes is especially applicable to a shallow or double brood chamber hive like the Danzenbaker. —Ed.]



SWARMS BUILDING DRONE COMB.

"Say, Doolittle, how long does it take you to get to questions sent in to you for your department in GLEANINGS?"

"Well, Mr. Snowberger, that depends on how crowded I am with questions. I am generally from one month to a year and a half behind; though I try as far as possible to answer the questions that are suitable for a certain portion of the year, so that the answers in the conversations will be as near applicable to that particular part of the year in which they can be put into practice to the best advantage as may be."

"I read your conversation in the February 15th GLEANINGS for 1904 on making sugar syrup for feeding bees, and noted it in my memorandum for future reference."

"That is a good way; and with the person who does this, it matters very little whether an article is suited to the portion of the year in which it appears in print or not, for with such memorandum before any person he can turn to any or all articles appropriate to the time when they can be used to the best advantage at just the time they are needed. But the great majority of readers do not keep such memorandum, and so it is better for any matter useful only at one particular time of the year to appear in print just at the time when it can be put into practice, or a little before that time might be better still, as then it would give a little time for a preparation to try the plan."

"I much enjoy your conversations, and get much valuable information from them as published in GLEANINGS. For this reason I have come over from Indiana (by letter) to talk with you for a few minutes."

"I am glad if any thing I have written has been helpful to you in any way, and I thank you for your words of encouragement. What shall we talk about to-day?"

"The point I want information on is how to prevent swarms from building drone comb when hived on starters."

"To answer you best, or so we can understand each other, allow me to ask what

course you have usually pursued when you have trouble with newly hived swarms building drone comb?"

"I have been hiving them in contracted brood-chambers, giving from five to six frames."

"If you gave them sections filled with foundation at the time of hiving, that plan should not give much drone comb, according to my experience."

"I gave them ample super room, shade, and ventilation, as I considered it. But, notwithstanding it all, they almost invariably fill the empty or starter frames with drone comb."

"What am I to understand by your term 'empty or starter frames'?"

"Why, frames empty except a half-inch-wide strip of foundation cemented to the under side of top-bar, the same running the whole length of the center to the same."

"Yes, that is all right. And you use all the five or six like that?"

"No. I always put in one or two frames filled with comb, so as to make the hive appear more home-like to them, and to make them stay better. And even then very many of my swarms desert their hives the next day after hiving."

"Now you have given me the reason why you have so much drone comb built. It seemed a mystery at first. But those two frames filled with comb explain it all."

"How is that?"

"Bees build worker comb most largely only when the queen keeps pace with her egg-laying. Nature has made it possible for the queen to fly and keep up with the swarm by her ceasing her egg-laying two or three days before the swarm issues; for a queen under the full height of egg-laying can not fly to a greater extent than a flying-squirrel can—that is, by a sailing motion she does not fall like a stone to the ground, but she can not rise in flight; she must gradually settle to the ground unless she has ceased laying from two to three thousand eggs daily, down to only a few hundred, or none at all."

"What has that got to do with the matter? I don't see."

"Wait a moment and I think I can make it plain. Nature not only stops this egg-laying at this time so that the queen can fly with the swarm, but also that she need not be pressed with a lot of eggs continually till comb can be built in the newly found home; for you are aware that the hollow tree or cave, empty box, room, or space into which they are likely to enter for a home, in a state of nature, is not provided with any comb; no, not so much even as frames with starters in them. Now, as soon as such a home is entered, the bees begin to clean and prepare this home for their combs, which will be barely started in from twelve to twenty-four hours, and in this time the ovaries of the queen begin to fill with eggs so that, by the time the combs are half as large as your hand, she is on hand with eggs for every cell as soon as deep enough for her to

lay therein. This is what I meant by the queen keeping pace with the bees in comb-building, and just so long as she keeps right up with her eggs in this way, laying an egg in each cell as fast as the bees complete it deep enough for her to lay eggs in, just so long will the bees build worker comb. But where comb is built much faster than she can keep up with in this way, then the size of cell is changed and drone comb is the result."

"Admitting that you are right in this matter, where does my giving a frame or two of empty comb come in?"

"By your providing more empty comb for the queen to lay in at the time of hiving than the bees would naturally build in five days, where only starter frames were used, and thus the bees are that far in advance of the queen at the beginning as well as at the end of the five days, while in the beginning she has no eggs to put in *any* of the eight or ten thousand cells you have given. Consequently the bees are way ahead of the queen in the matter of comb, and for this reason you almost invariably (as you put it) get your starter frames filled with drone comb. I wish I could emphasize this to such an extent that *all the bee-keeping world* could hear; for on no other subject do I get so much inquiry as I do on this. If you want your swarms to build only *worker* comb, in *no case* give those swarms *any empty comb* at time of hiving."

"Perhaps you are right in this. But would not my swarms desert more than they now do, did I not give the comb?"

"Perhaps, under like conditions."

"What do you mean?"

"A large prime swarm, coming from a ten-frame hive with supers on, is not likely to be contented when hived in a hive so small as five or six frames; and these are the conditions under which you have placed such a swarm."

"But what other conditions can there be when we use the contraction plan for section honey in connection with swarming?"

"My way has been to hive all such swarms on the whole ten starter frames; that is, give this swarm the full empty ten-frame Langstroth hive. This places them in the same position they would be in when they found a home in a state of nature. And not one swarm in fifty will desert such a home with me."

"But you can't use the contraction plan in this way."

"Let us see. I leave them thus for 48 hours, at which time they are fully established in their new home, with no desire to leave. They have more or less comb well under way in from four to six frames; the queen is keeping pace with her eggs, and all is lovely. I now open the hive and take away four to six of the frames having the least comb in them (generally the starters are little touched), contract the hive to suit the frames left, and put on the sections; the result of which is a contented swarm, these

frames left filled with all worker comb, and the sections filled with beautiful snow-white honey."

"Well, if this thing will work as well with me I shall feel well paid for coming to see you. I will try it at least."



ENTRANCE-GUARDS FOR OUT-APIARIES TO PREVENT SWARMING; ALSO TO PREVENT NEWLY HIVED SWARMS FROM LEAVING.

I want to ask you something concerning running out-apiaries. I have 155 stands of bees at present—more than I think will pay to keep in one place. I am thinking of running an out-apiary next year. How far ought the two to be apart? I will give my plan for running it.

I thought I would put on entrance-guards just before swarming, and visit the apiary once a week and take the guards off and let them stay off all day so the bees could swarm that day if they wish to, and also in order that the young queens could come out and take their flight; and when I leave the apiary late in the evening, put the guards back on and continue the same way through the swarming season, then remove the guards for the rest of the year. Please give me your opinion as to how you think the plan will work in running out-apiaries.

I noticed in GLEANINGS that some have complained of swarms running away. I will give my plan of keeping swarms from what we call running away. When I have a swarm I put a small entrance-guard on the hive, and let it remain there for a few days—that is, until the bees have commenced work. I then remove the guard, and therefore I never have any swarms leave after I have them. I have had them try to leave every day for several days, but the queen could not get through the guard; and so the swarm would return and go back into the hive. I think if those who have been troubled with swarms leaving will try this plan they will not be troubled in that way any more.

Dawson, Ga., June 5. E. J. HORNE.

[It would not be practicable for you to take off the drone-guards and expect swarms to come out when you were at the yard. As a general thing, when a swarm attempts to go through the metal, and tries it two or three times as it would do in your absence, it will kill its queen and rear others. What is worse still, it will waste valuable time right in the height of the season, sulking, because it can not go off with its queen.

The use of the drone-guards to keep the

swarm from going away when once hived would be all right.—ED.]

A SUBSTITUTE FOR THE RUSSIAN TIN BOXES;
COMB HONEY WITHOUT SECTIONS SIM-
PLY WRAPPED IN OILED PAPER,
AND SLIPPED INTO A
CARTON.

If the Russian tin box can not be produced in this country at a price that will meet the conditions of our honey market practically, then I believe the same thing can be accomplished in another way, and that "cut comb honey" can be wrapped in oil paper and placed in a nice strong paper carton, and marketed as well as or better than in the tin boxes. As to preserving honey in transportation, store, and for table use, I do not see why this plan would not be perfect. Properly wrapped in oil paper, there could be no leakage, and the natural aroma of the honey would be retained, as the wrapping would be practically air-tight. Frames spaced $1\frac{1}{2}$ from center to center will give sealed comb $1\frac{1}{2}$ thick; and if this is cut into sections 5×4 they will weigh one pound, after the honey has drained out of the severed cells. These $5\times 4\times 1\frac{1}{2}$ sections of cut comb honey, wrapped and put into a $5\frac{1}{2}\times 4\frac{1}{2}\times 1\frac{1}{2}$ carton would be in fine shape for distribution, I should think.

To secure "no-drip" packages, the paper wrapper would have to be 14×10 , and for shipping honey put up this way sectional crates would be required, so each carton would have a separate pocket. Honey put up in this way might put an effectual stop to the canards about comb honey.

Blairsville, Pa., May 11. W. D. KEYES.

[I question somewhat whether it would be practical to wrap up cut comb honey in paraffine or waxed paper so it will not leak out. If there should be a break in the corner of the paper, a large amount of honey would ooze out, soiling the retailer's counters and showcases in a way that would disgust him forever with goods put up in that way. I hope, however, you will try the plan, and report how it works, both in wrapping and as to how the trade takes to it.—ED.]

BEE-ESCAPE SWARMING; A PLAN THAT SEEMS TO HAVE CONSIDERABLE MERIT.

For three seasons I have used the following plan with success. When I find larvae in queen-cells so that I know the colony is preparing to swarm I put a body filled with frames of foundation on the bottom-board, next to a queen-excluding board, then the surplus cases, next a Porter bee-escape board; on this the body containing the frames of brood, and, lastly, the hive-cover. Leave the hive in this condition on the old stand till the field bees have had time to pass through the bee-escape, say twenty-four hours. So far the manipulation is the same for all purposes. The next thing to do is to introduce a queen into the colony below the queen-excluder. This may be the old queen

taken from the brood-nest above, or another. If another, the old queen may be left where she is till I decide what to do with her. If I wish for increase, at the proper time, whenever I think a sufficient number of the newly hatched bees have gone below, or I conclude I have left in the old brood-nest enough brood and bees for the nucleus of a new colony, I remove the old brood-nest to a new stand. If I do not wish for increase I may kill the old queen and let the young bees go below through the bee-escape till all are hatched, or let the old queen continue laying for a while before she is removed. If I put the old queen below, and wish for increase, I introduce a new queen above and make a new colony at the proper time as before. If I make the bees above queenless, I usually keep queen-cells cut out — a small job, for the larvæ soon become too old, although I have got along all right by laying a piece of perforated zinc over the hole of the bee-escape.

Solon, Maine.

TURNER BUSWELL.

[We should be glad to get reports of this from many of our subscribers. The only thing I fear is that too many of the bees might desert the brood in the old hive, causing chilling or starvation of the unsealed brood. — ED.]

AN OLD QUEEN-BREEDER FAILS TO MAKE THE BABY NUCLEI WORK.

I have had to give up queen-rearing in my out-apiary, as there are too many blacks and hybrids in the vicinity. I can attend to a hundred nuclei, and some over. I am not depending on baby nuclei. I tried about a dozen of Laws' make last year, but made a failure. I have not tried since. He recommends, if I understand right, to renew the bees in the mating-box every time a queen is taken out. Is this the case with the Swarthmore? The bees would invariably swarm out in mine. It may be that I did not keep them stopped up long enough. As to the Sibbald plan, it is the best in the world to have queen-cells built, but surely they had better be cut out before the first one hatches out, or there will be a good many bees less in the hive when examined two weeks from time of operation. I transfer larvæ in drone comb, and give to one of these artificial swarms without royal jelly or fussing with cell cups; and I can have as many cells built as I want that will make as pretty a picture as you want to see.

To get best results I give a frame of even-up larvæ, first for 24 hours, and then take that away and put in an upper story to have cells that are started finished, and about one hour after taking away that frame of brood I transfer larvæ into drone comb, and they will accept nearly all, and in that way work the one colony for queen-rearing on two sets of larvæ.

Coronaca, S. C.

J. D. FOOSHE.

[Our first experience with baby nuclei was unfavorable. We tried them the second and

third time, and still they apparently went back on us; but now we have discovered some secrets of our failure. We have already given in late issues some of them; but the most important is to take queenless bees from an outyard and give them a virgin, and, if practicable, brood. Make up as many of these as possible at the outyard; bring them to the home yard, then give them virgins. Keep them shut up for 24 hours, then let them loose, but do not put them near the entrances of strong colonies.

We do not find it necessary to give a fresh lot of bees each time a queen is fertilized. Last summer we used the same bees over and over again, and are doing it this summer.

We have reared some very nice cells off from drone comb, and that, too, without royal jelly, as you speak of; but in all kinds of weather and under all conditions we get far better results with the royal jelly, and the Pratt wooden queen-cups are much more convenient to work with. — ED.]

THE LEWIS-HALL IMPROVED FOUNDATION-FASTENER.

Replying to your footnote to my article regarding "bottom starters," etc., page 552, I will say yes, I think any machine or fastener using a hot plate can be arranged as you say, so far as I know, though the Daisy, I think, would waste too much wax. The Lewis has a very thin sheet-steel plate; and when sharpened it melts away scarcely any wax at all. By using the beveled edge, and by slanting the fastener slightly forward, all the melted wax flows toward the edge of the plate, and is wiped off and used for fastening each starter by the starter as the hot plate drops back from under it, so there is no waste wax-drip at all.

Until I learned not to turn the lamp up so high as to smoke, and make the hot plate black, the waste wax would get black, and, of course, that made trouble. Yes, I have a good reason for fastening them as I do. Perhaps the main reason is because I am too clumsy and thick-headed to learn how to handle such a narrow strip of wax (especially when the mercury was playing up around 90 and 100°), and get it in the section where it belongs. You say it seems to you that, to cut up and fasten in the ordinary way separately, is quicker, and then your closing sentence seems to imply that a "master mechanic" would need to be employed to change the machine. I don't know how many I can fasten in a day, or in an hour; but I have fastened in as many as 23 in a minute; but one wouldn't want to rush through life at that rate very long.

But say, E. R., I have confidence enough in my plan to believe I can take a new machine out of the shipping-case, arrange it for bottom starters, set it up, and put in 5000 or 10,000 starters (bottom and top), and do it just as well and quick as you can, or any other man (Dr. C. C. M. not excepted).

F. W. HALL.

Hull, Iowa.

[And perhaps you could do it quicker. Twenty-three a minute is not slow work.—Ed.]

THE DANGER OF GIVING YOUNG WORKER
BROOD TO A COLONY HAVING A VIRGIN
QUEEN.

On p. 543 I notice that Mr. Doolittle says, in speaking of queenless colonies, "If queen-cells are started, procure a queen for them from some source, or give a frame of brood from some other colony every week until a young queen from one of the cells built becomes fertile." Now, I think this, especially coming from Mr. Doolittle, is apt to cause trouble for those who try it, as my experience for years past is that, if you give to a colony with a virgin queen a frame of brood containing eggs, nine times out of ten they will kill their queen and start cells again. Give them all the brood you like before the virgin hatches, and after she begins laying, but never before she is fertile.

Sometimes when honey is coming in rapidly they will not kill their virgin if given brood, but in most cases they do.

Montgomery, Ala. D. R. KEYES.

HOW THE COMB-HONEY LIE IS DEEPLY ROOTED
IN THE POPULAR MIND.

Last week I had a nephew from Portland, Oregon, visit me. We had honey on the table. He said he enjoyed it very much because he thought it was pure, not manufactured. We told him it could not be manufactured; but he insisted it was, because the frames it was in were *spotlessly* clean, and he was sure it was. He is a grocer, and runs three delivery wagons; but we insisted it could not be manufactured, and told him of the reward offered for a fair sample of manufactured honey. He said, "Why, I am so glad to know this!" He said he could sell much more honey if it would come to him not cleaned. He said he could sell double the quantity. He added, "Tell people not to clean honey if they want to sell it." Since we quit cleaning ours we can sell it all near home, and no one accuses us of making it.

MRS. L. C. AXTELL.

Roseville, Ills., May 23.

QUEENS SENT BY MAIL DYING WHEN LEFT
IN METAL LETTER-BOXES EXPOSED TO
THE SUN'S RAYS.

To have queens placed in the usual metal letter-box exposed, as it usually is, to the direct rays of the sun, and with little or no ventilation, means death to the queens in a short time. Where may I get an "approved" letter-box suitable for the reception of queens? or what provision is made by the Postoffice Department in such cases? I need a large well-made box provided with slot and arrangement for lock.

Westminster, Md. LEW W. HAINES.

[We are not able to advise you with regard to the approved form of letter-box;

but if we understand the matter correctly you could put a wooden box in its place that would be perfectly acceptable to the government. The present box, if painted white, would help somewhat. You had better arrange with your mail-carrier to deliver the queens direct to the house rather than put them inside the box where they will be subjected to the sun's heat.—Ed.]

EXPERIENCE WITH THE ALEXANDER PLAN
OF INCREASE; AN ANSWER TO W. H.
CRAWFORD'S QUESTION, PAGE 606.

On May 5 I put a queen in a new hive with a frame of brood, and set the old hive on top, as directed by Mr. Alexander. May 16 I took the old hive off and placed it on the new stand. May 17 I put the cage with the laying queen in the new hive. May 20 the queen was released about noon. May 21 the queen was killed by the bees after being in the hive 24 hours. May 22 I gave them a comb of brood and eggs. I did not look into them again until June 1, and found no queen-cell had been built. I closed up the hive without looking at any more frames, but next day I opened up and found brood and eggs. Some of the brood was sealed. The queen had evidently hatched out while the hive was on top of the new one, and was ready to mate when it was taken off. I had noticed several queen-cells while looking for the old queen, but thought the bees would tear them down as soon as they decided not to swarm. I think this answers in part, at least, the question of Mr. W. H. Crawford, of Roswell, N. M. This queen would, no doubt, have mated through an auger-hole if she had had one, as she lost no time about it when the hive was taken off.

My object in writing this is to warn beginners like myself from giving valuable queens to these new colonies without first making a thorough examination and removing all queen-cells. I ordered a tested queen from an adjoining State; and as it was my first attempt at introducing I felt pretty bad when I found my fine queen "stark and stiff" in front of the hive. Final results, however, impress me more than ever with the great value of this method to bee-keepers.

J. D. ROWAN.

Chesterville, Miss., June 9.

A REPORT FROM THE ALEXANDER METHOD
OF INCREASE.

As I have been a reader of GLEANINGS for some time, I will send you my report of the Alexander method of swarming which I have been trying without success.

On May 24 I took a frame of brood on which was the queen, also adhering bees, and placed them in a hive filled with empty combs, then put this hive on the old stand, next placing the old colony on top with a queen-excluder between. On June 1 they swarmed as any other colony would. My excluder was made of three pieces of perforated zinc (size about 3×6 in.), on a board the size of the hive. Perhaps there should

have been more. Do you think this was the reason for their swarming?

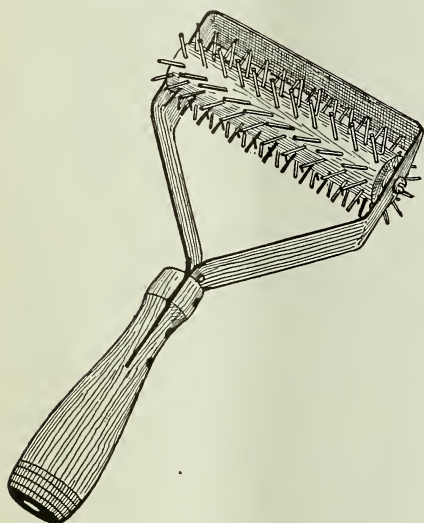
Highland, Mich.

DON MILLS.

[You had enough perforated zinc, I should say. I am unable to explain why your experiment was a failure except as it was conducted on too small a scale, for "one swallow does not make a summer." If you will try it again on a larger scale, using more colonies, and following Mr. Alexander implicitly, you will, in all probability, get the same result he does.—Ed.]

AN UNCAPPING-ROLLER.

The roller which I am sending you I use for opening the cappings on combs, when giving colonies a frame with honey for stimulating in the spring. When rolling over the combs the sharp points of the roller



press just a little hole through the cappings, enough for the bees to start on. When using the uncapping-knife to remove the cappings it often leaves the frame in a rather smeary condition.

C. H. W. WEBER.

Cincinnati, O.

[This tool is advertised in nearly all of the bee-supply catalogs of Germany. Whether it is used for actual uncapping purposes I do not know; but with honey as thick as we find in most localities in the United States a mere perforation through the capping would not be large enough. The combs would have to be revolved at a very high rate of speed—high enough to crush them. I am inclined to the opinion that the tool is used a good deal as Mr. Weber states above, for the purpose of stimulating only.—Ed.]

BEEES BUILDING COMB TO UPRIGHT CLEATS ON THE FENCE.

In using shallow extracting-frames in supers with plain sections and fences, as per

Townsend plan in June 1st GLEANINGS, would not the bees build comb to upright cleats of fences next to the frame? Would it not be a good plan to remove the middle cleats of the fences next to the frame?

Vassar, Mich.

R. D. CHAPPELL.

[Yes, there would be danger of the bees building their combs up against the post of the fence next adjoining. In that case, perhaps it would be best to remove those uprights, or, in other words, use a one-sided fence—the plain side to the extracting-comb and the bee-spaced side to the plain sections.—Ed.]

WINTERING BEES IN VENTILATED FROST-PROOF BUILDING.

I have read the discussions about inside wintering of bees. We put ours into winter quarters the 17th of November, and I set them out the 18th of March—149 out of 152 coming out in fine condition, there being two of them marked "doubtful" when they were put in. I winter in a frost-proof building *run entirely by ventilators*. They are in total darkness, and an average temperature of 44 degrees. I tried a few in the cellar, but they were not in nearly as good condition. The bees dwindled away worse, and the combs are somewhat moldy. We have not given our bees a midwinter flight in ten years.

CHAS. F. LASHIER.

Lestershire, N. Y., May 15.

STRONGER DIVISION-BOARDS.

I have noticed considerable said in GLEANINGS about division-boards and followers not being strong enough. I have some made of three-ply stuff, such as chair-bottoms are made of, and I find them very substantial. I think if you will try it you will find they will not break, and will stay in place, and they are not expensive.

F. H. BRAYNIER, M. D.

West Pawlet, Vt.

[Division-boards made of the material described would be somewhat expensive. We are now making a division-board that is fully two or three times as strong as the ones we turned out last season, and at the same cost.—Ed.]

BEE LOUSE.

In watching my bees as they come out of the hive on to the alighting-board, I notice some of them shaking and clawing at their backs. I thought at first it was paralysis, but I find on a close examination that there is a big red louse just under the wings on the back of the thorax. I should like to know if there is any way of getting rid of this pest.

ANDREW B. JUDSON.

Escondido, Calif.

[The insect that you find on the backs of your bees is what is known as *Braulta cævus*. They never do any serious damage that we have ever been able to discover. They are found only in warm climates.—Ed.]

TWO QUEENS GOING OUT WITH ONE SWARM.

May 22 I had a fine prime swarm issue; and when I shook them in front of the hive I saw two fine large queens enter—in fact, I guided them in with my hand. Now, if it is the *old* queen that goes out with the first swarm, where did the *two* come from? Do not say that two swarms went together, for I was near them almost the entire time, and would have seen another had one come out. Besides, this one came from a colony somewhat remote from the main apiary. The next morning one queen was outside on the hive-stand dead. My first swarm came in April, and since May 1 they have been swarming almost daily.

Farmington, W. Va. JOHN A. BOCK.

[It sometimes happens, in the case of a supersedure, that the old queen will be allowed to continue right along with the young one. So far as the bees are concerned, they do not care; but it is a question of whether mother and daughter can get along peaceably in the same house. But there are many recorded cases where they do. If the colony has such a pair, the swarm probably will have two queens.]

Or it is possible or even probable that the colony was preparing to swarm—that there were ripe cells, one of them having hatched. When the swarm went forth, the old mother and the virgin went with it. This not infrequently happens.

Or it is possible that the prime swarm had gone forth already, without your knowledge. The second swarm might contain several virgins; in fact, we have had numerous reports from beginners who wondered why it could be there were so many queens in one swarm, when, as a matter of fact, a second swarm will probably have more than one virgin.—ED.]

MELTING UP FOUL-BROOD COMBS IN A GERMAN WAX-EXTRACTOR.

Please tell me how to treat a Root-German steam wax-press so as to kill all foul-brood spores, etc., so that honey pressed from it (which has not been contaminated) will be safe to feed for winter stores. In rendering foul-broody combs into wax with this press, will the wax need any further heating before it will be safe to ship to the foundation-makers? I have about 350 frames of foul-broody combs which contain considerable honey.

ERNEST W. REID.

Lennon, Mich.

[If these combs contain honey it probably would be best to squeeze it out by putting the combs in cloth bags and then running the plunger down on them. If the honey is squeezed out in this way you can use it for feeding, and extract the wax in the squeezed combs later. Before using foul-broody honey for feeding, however, you should boil it thoroughly, say for half an hour, and next day do the same. As an added precaution it would be well, also, to boil the honey again in two or three days, so that any

spores of the disease which were not killed at the first boiling would develop and be killed later. You can then steam up the press and render the wax from the combs, as described in our directions. The wax will probably need no further treatment before sending it to the foundation-manufacturers, for the heat during the pressing will probably be sufficient to remove all traces of the disease.]

During this whole process you must be exceedingly careful. All cans or pails which come in contact with the honey or wax from these foul-brood combs must be thoroughly disinfected by boiling, and all the work should be done at such a time or in such a place that no bees will come around trying to rob, thus carrying the disease. After you have finished the work, be sure to boil every dish and tool that you have used; and it would be well, also, to allow the press to steam for perhaps two or three hours, and then, as before, it would be well to steam again in a few days. In this way the germs will be killed and the machine will be free from disease.—ED.]

ONE SWARM SETTLING IN FIVE OR SIX CLUSTERS.

May 20 I had a swarm about 10 A.M. It settled on the limbs of trees in five or six places, about as large as a goose egg. On looking at the old hive I noticed a ball, and, sure enough, they had balled the queen and killed her before I could stop it. What should have been done? GEO. W. SABIN.

Wilmington, O.

[When there are several little clusters like this, shake them all into one box or basket, and hive in the regular way. Possibly there was an old queen and a virgin, and one or the other was one too many.—ED.]

A SHORT EASY WAY TO CONTROL SWARMING AND MAKE INCREASE.

Having read with much interest the various plans given in GLEANINGS for controlling increase and swarming I will give one which, if not new, is good, as I have practiced it for some time with uniform success.

We usually have a light but long-continued flow, and swarming begins early. Now, as I want only moderate increase I proceed thus:

Having found queen-cells started in No. 1 I go to another strong colony (No. 2) and move it to a new stand; then I place No. 1 on the stand of No. 2, and an empty hive on the stand of No. 1. Next I take the queen and one or two frames of brood and bees from No. 1 and put them into the empty hive and fill up with frames containing starters, giving the now queenless colony a ripe cell if convenient.

It is not essential that there be queen-cells started in No. 2 when the shift is made, if the colony is strong in blood and bees.

In a few days I have three good colonies instead of two, all ready for the flow, and with no thought of swarming.

Franklin, Tenn.

J. M. BUCHANAN.



Ho, every one that thirsteth, come ye to the waters,
and he that hath no money; come * * * —ISAIAH 55:1.

I was sent as a delegate to the State conference of the Congregational churches of Ohio; and I should like to tell something about that conference, but I have another matter in mind just now. I went to Oberlin in my automobile, and of course had a most enjoyable trip. Although the roads were not yet in very good trim I managed to run the machine with so much economy that 1½ gallons of gasoline carried me the whole distance, 20 miles. But I am not going to talk about automobiles either.

As soon as I put in an appearance at the big church in Oberlin I was informed that my abidingplace would be with a namesake, Mr. A. S. Root, the college librarian. I greatly enjoyed getting acquainted with Mr. and Mrs. Root and a lot of Rootlets. Of course, I had to take them around town in my auto; and in making some repairs and adjustments I found it necessary to wash the black grease from my fingers. I wiped it off on the grass and on a piece of paper as well as I could before attempting to wash. By the way, let me tell you that, when you are doing any kind of greasy work, you should have plenty of soft newspapers; and before you undertake to wash, clean your hands thoroughly on the paper.

Mrs. Root ushered me into a neat little bath-room where were all the modern appliances for personal comfort. As I turned the nickel-plated faucet over the marble wash-bowl I said mentally, "Now, this is city water, and, of course, it is hard, and I am going to have a job in getting my hands clean, especially around my nails, with hard water such as we have almost all over Northern Ohio."

Just here came one of my "happy surprises." I think I will call it happy surprise No. 1. While the water was as white and clear as the finest spring water, it was apparently as soft as the purest rain water. With a little soap my hands were cleaned beautifully, leaving them with that nice soft feeling that you always get with rain water. The thing that surprised me was that such beautiful water as that was drawn from the hydrants, indicating that the city must be supplied with just that kind. A bright clean glass was at hand, and I thought I would just see whether it was really as soft as it appeared to be when used with soap. Why, I should have pronounced it *distilled water*; and then I began asking questions at the dinner-table. Mr. Root said it would afford him great pleasure to show me through the waterworks plant and have the man in charge explain all about the filtration and the chemical processes that removed the lime and made the water almost chemically pure. With the aid of the auto-

mobile we were soon down to the waterworks. By the way, what a grand thing it is that the State of Ohio has taken in hand this matter of furnishing water for people to drink, and employed our very best experts to superintend the waterworks! Whenever I go into a new town of late I greatly enjoy finding out all about their water supply; and I do enjoy most intensely seeing an apparatus that is not only scientific but clear up to date in artistic beauty. Of course, small towns can not afford to go to too great an expense in this latter direction. Well, a few glances to the right and left enabled me to take in the beauty of the Oberlin waterworks plant, and a few moments later I had happy surprise No. 2. When Mr. Root had introduced the manager and engineer, this latter personage said:

"Why, Mr. Root, I do not know of any other man in the world whom I should enjoy showing around and talking with more than yourself."

"Why, my good friend, I am very much obliged; but how does it come about that you enjoy meeting *me*? You are not a bee-keeper as well as engineer, are you?"

"No, I am not a bee-keeper; but my neighbor is. Do you see his hives over there across the side-hill? Well, I have been following you through your journal for years past. Yes, I read all about the flying-machines, about temperance, good water to drink, and all that; and I am happy to be entirely at your service this morning."

As our children have all been educated in Oberlin—that is, after quitting the Medina schools—I have for years heard more or less about their water supply. The plan they adopted years ago was a reservoir filled with surface water from a little shallow brook that comes from higher ground a mile or so out of the city. Before they had their present apparatus they endeavored to fill the said reservoir with water as clean as possible by turning the brook off to one side when it first began to rain, much as we turn the switch to wash the smoke off from our slate roofs when the rain commences. After the water was running down the brook tolerably clear they let it into the reservoir. Now, it is a hard matter to manage this arrangement for household use, as I know by experience; but where it contains the water supply of a considerable city they can well afford to have a man employed to give his whole attention to it during rainy periods to get the very best part of the rain water into the reservoir. The above plan has been in use for many years; but the water was hard, and not always free from other objectionable substances. The present apparatus, I think, has been in use a little over a year. Besides the big reservoir I have mentioned, there are now two smaller ones, situated quite a little below the large one, with gates or valves so the water can be drawn from one to the other. First, they endeavor to get rid of all sediment by a sort of settling process as much as possible. Then the lime and other chemicals in the water are re-

moved by a chemical process. If I remember correctly, the only chemicals used are sal soda and lime. It seems a little funny that they should use *more* lime in order to get rid of the lime already in the water; but our expert chemists understand their business, no doubt. A gasoline-engine mixes the chemicals and distributes them properly through the water. Not only the chemicals but the operating machinery here used is so inexpensive that this beautiful water is at the present time used for sprinkling lawns and streets, operating water-closets, and for a variety of purposes throughout the city. In case of a fire, if it is only a moderate one the pure water is used to extinguish it; but if the fire threatens to be a serious one, the engineer of the waterworks can turn on the water from the big reservoir. When this happens it will take a little time to run this water out of the pipes after the fire, but it does not occasion much inconvenience. In a city having the moral tone of Oberlin they do not have many fires—at least they ought not to have many.

Let me digress a little. Years ago we collected rainwater from the roofs of one of our factories, for drinking purposes for the hands; but we found it an expense and a hindrance to provide ice for said drinking-water for 100 or more people. We had a well of hard water that was very nice and cool, but a good many could not drink it. Now, to make this rain water cool enough to drink I ran a pipe down into the well and up again so as to cool the water in its passage down and up. This worked all right, except that one was obliged to draw off a large amount of warm water from the pipes in order to get the cool water to drink, and it wasted so much soft water that we had to give it up. Now, the engineer of the Oberlin waterworks has got on to my plan—that is, for drinking water around the neighborhood of the works. He bored down into the ground about 27 feet, with an auger; then he put down into the hole thus made some four-inch sewer-pipe, cementing the joints so it will hold water. Then an iron pipe was sent down to the bottom of this sewer-pipe well, and a stream let into it—just enough to allow the water to get as cold as the earth at that depth. This really made an artificial soft-water spring. Of course, I was thirsty while talking with him so much about good water, and I very much enjoyed a drink of pure soft water so cold that it caused dew to form on the outside of the pipes where it was running. By the way, the most satisfactory test to me of the purity of the water was a little fountain where the spray fell on some flowers and on a pile of rocks. Many of the fountains in our large cities are unsightly because of the sediment deposited on the bowl of the fountain and the rockwork surrounding it; in fact, it never gives me very much pleasure to see a fountain where every thing surrounding, where the spray strikes, is covered with an unsightly slimy deposit of muddy-looking chemicals. Well, the rocks and plants at

this Oberlin fountain were just as clean as if it were drops of rain instead of spray from an artificial fountain. When the water evaporated right in the sunshine there was no sediment or deposit at all. Every thing was as clean as a china closet. When I asked the engineer if that reservoir did not produce mosquitoes he replied, "Why, bless your heart, no. Just put some sunfish in your ponds or reservoirs, and they will take care of every 'wiggler.'"

Since he mentioned it I think I have been told the same thing before, but I had forgotten it. When I asked, "By the way, my friend, has not some scientific authority lately informed us that the presence of a very minute quantity of copper sulphate will prevent any possibility of typhoid or other deleterious bacteria from being present in drinking-water?"

"Yes, Mr. Root, you are right about it; and there is deposited in the center of the large reservoir quite a quantity of the crystals of copper sulphate; and by chemical analysis we are enabled to manage so as to have the water contain just enough of this fungicide and not too much. The water is also examined once every so often for the presence of bacteria or any other impurity." Thanks to the achievements of modern chemistry, we are, by the aid of scientific machinery, enabled with but little trouble to keep every thing just right to furnish the very best drinking-water possible, at an expense that is comparatively insignificant when carried on on a large scale as it must be to supply a city.

Mr. W. B. Gerrish, the engineer who so kindly showed me around, says if typhoid fever is ever found in Oberlin we must look elsewhere than to its water supply for the cause. The water, after being treated as I have mentioned, is passed through a beautiful filtration plant that does its work so perfectly that the water, besides being almost soft, is free, practically, from any sort of sediment. I suppose you are aware that the chemists employed by our State can detect the presence of these disease-producing bacteria now very readily; as a consequence, all the waterworks that supply drinking-water to even small towns in our State are practically safe. The State employs a man to make it his business to examine this water. Of course, it is next to impossible for the State to exercise a similar jurisdiction over the water from wells and natural springs belonging to each home.

This is an exceedingly important matter; for there are certain localities where fevers have prevailed and taken people off one after another for years until scientific investigation showed that the drinking-water was at the bottom of all the trouble.

When I was sixteen years of age my father moved from Summit County, where there is an abundance of soft-water springs, on to a farm in Medina County. There was a good well on this farm—that is, it was deep enough so the water was always cold. But I was a frail lad, and that hard well

water kept me sick a good part of the time. The others laughed at me, and said it would be all right when I got used to it. But I soon discovered that, by drinking rain water entirely, I got along very well. Perhaps if I had used boiled water from the well it might have answered; but we did not know about boiled water at that time. For a year or two we had no cistern, so I used to keep my drinking-water in large stone crocks; and every little while there was a row in the camp because somebody used up my soft water through carelessness or because it was considered one of my notions. You can imagine, therefore, that I feel considerably gratified to find the great State of Ohio has decided as I did when a boy, that the *foundation* of good health is in having pure wholesome water to drink, and a water that does not contain an objectionable amount of unwholesome chemicals.

CATCHING SWARMS OF RUNAWAY BEES, ETC.

Mr. Root:—Is this one of the humbugs? If there is any thing in attracting swarms of bees I think it would be in your ABC of Bee Culture, because you have every thing that is good. I think GLEANINGS is one of the best papers in the country for exposing humbugs and fakes. I know of one poultry paper that a whisky company offered \$1600 for a year's advertisement, but they would not accept it. That is the kind of editors we want now. C. O. KELLEY.

Friend K., if you will turn to page 627, June 1, you will see something about a dollar book on catching swarms of bees. It seems Mr. Bryan does not want to send it to us; but as he keeps advertising it in various papers I think we shall have to keep after him. Now, my good friend Kelley, I think we shall have to get you to help us. You send a dollar, and get the book; and after you have looked it over send it to us and we will pay the dollar back; then I can write the book up. We will say to our readers that the advertisement mentioned in the above is as follows:

THE ART OF ATTRACTING AND CATCHING SWARMS OF BEES.

Copyrighted June 6, 1904.

Price \$1.00.

T. W. BRYAN,

FICKLIN, ILL.

Let me repeat: If the above is a book fairly worth a dollar in telling something not generally known about catching runaway swarms, we shall be glad to give it a free advertisement. From the clippings we have received from our readers we notice he is writing extensively for a certain kind of agricultural papers, and advertising his secret in the reading-columns. Here is a sample, clipped from the close of an article a column in length:

ATTRACTING HOMESEEKERS.

I soon became satisfied that, if I could hit upon some plan to attract these "homeseekers" to an empty hive already fitted up for them, I was certain to catch the queen and her entire swarm. To-day I am master of the situation, and can teach any one the art of fitting up empty hives so as to attract for miles the homeseekers from all points of the compass and thus catch all the swarms you may want, year after year. You will not even have to watch your hive, but some bright day you will wake up to the fact that a large swarm is

hovering overhead and already settling on your hive, and that on the morrow they will send out thousands of workers to gather pollen and honey for you.

No such method of advertising would be permitted in any respectable agricultural paper.

JAPAN, AND SOME ADDITIONAL FACTS IN REGARD TO WHY THEY SEEM DESTINED TO CONQUER THE REST OF THE WORLD

We now learn from undeniable authority that Japan has had this conflict with Russia in mind for years past; that she has been educating her people in developing muscle, and leaving no stone unturned to commence and carry successfully to the end one of the biggest fights of a little nation against a great one that history chronicles. The whole world is now on the *qui vive* to discover how she accomplished this tremendous undertaking. The following clipping from the *Chicago Advance* hits the spot. Read it:

The hearts of the anti-tobacco crusaders will be filled with joy when they learn that the Japanese police confiscate the smoking utensils of any youth under twenty, as well as his supply of the weed. Parents and guardians who knowingly permit the offense are liable to a fine, and dealers who furnish tobacco to the youth are also fined. This law was passed in 1900.

Now then, friends, with the above right squarely before your eyes, right here in the United States of America, will you permit your boys to take up the senseless, vulgar habit? and you who are older, even if you have already contracted the habit, are you going to persist in crippling yourself, mind and body, by outraging nature and nature's law? Whatsoever a man soweth, that shall he also reap.

AUTOMOBILES ON COUNTRY ROADS.

Of course, this is a matter that comes up more or less in our agricultural periodicals, and, as a natural consequence, these rural papers consider mostly one side of the question—that of the people who use horse-drawn vehicles. The *Ohio Farmer*, however, has seemed to be remarkably fair in the matter, and its editors are wisely looking ahead, taking a broad view of the matter. In the last issue of that paper a woman asks what can be done with the automobiles. After giving the Ohio laws in regard to the right of way, Prof. W. I. Chamberlain closes up with the following:

In my own experience and observation the owners and operators of automobiles touring in the country have acted like gentlemen, stopping both car and engine, giving fully two-thirds of the road, and even getting out and leading frightened horses driven by ladies. In time I certainly hope that care, courtesy, and forbearance on both sides will accustom country horses to the new and strange vehicles. At present it is pretty hard on country dwellers.

The above accords with my experience and observation; and let me say to the *Ohio Farmer* people that the farmers are no more anxious than the owners of autos themselves to have all reckless, heartless drivers promptly fined and put in jail until they learn to respect the laws of our land.